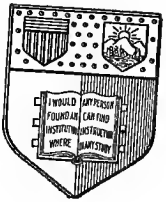

INDUSTRY IN WISCONSIN

BY

JOHN GIFFIN THOMPSON

Instructor in Political Economy
University of Illinois

A THESIS SUBMITTED FOR THE DEGREE OF DOCTOR OF PHILOSOPHY
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THE RISE AND DECLINE OF THE WHEAT GROWING INDUSTRY IN WISCONSIN

BY

JOHN GIFFIN THOMPSON

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PREFACE

It was the original intention to add another chapter, relating to the system of marketing wheat within the state, to this study. Lack of space, however, together with the fact that it is difficult to separate a consideration of the method of handling wheat from a consideration of the methods employed in the moving of other grains seemed to advise withholding this portion for separate publication.

The author desires to express his appreciation for many helpful suggestions from various sources, and for courteous answers to inquiries by letter. His thanks are due in an especial degree to Professor Henry C. Taylor of the Department of Political Economy at the University of Wisconsin, and to Professor Frederick J. Turner, of the Department of American History, at the same institution, for reading the manuscript and for scholarly and pertinent criticism of the same. The unfailing courtesy and efficient services of the members of the staff both of the library of the University of Wisconsin and of the library of the Wisconsin State Historical Society merit the warmest acknowledgment. Lastly, acknowledgment is due to the Carnegie Institution for assistance in the preparation of this study.

With the hope of stimulating the reader to undertake the entire study for himself rather than with the object of attaining even approximate completeness, a concluding and summarizing chapter has been added, indicating in a general way the trend of the whole and pointing out some of the main conclusions. The detailed character of much of the descriptive material relating to the strictly agricultural portion of the study and the repetition of general principles and conclusions already occurring therein, seemed to recommend less emphasis upon this part in the concluding chapter, with the result perhaps that undue prominence has there been given to certain other features—certainly of prime, but not of paramount, importance.

June 18, 1908. JOHN G. THOMPSON.

PART I

EARLY CONDITIONS

THE RISE AND DECLINE OF THE WHEAT GROWING INDUSTRY IN WISCONSIN

CHAPTER I

INTRODUCTION

In the rapidity of the rise and decline of the wheat industry, and in the extent of that decline, Wisconsin is unique among the states of the United States that have been important in wheat culture. Illinois comes more nearly approximating Wisconsin in this respect than any other state. Illinois, however, maintained, from 1859 to 1879 inclusive, first place in the number of bushels produced, dropping to third place in 1889 and to fourteenth place in 1899. Wisconsin reached third place in 1859, was exceeded by Illinois alone in 1860, and dropped to fifth place, ninth place, twelfth place and twenty-second place in 1869, 1879, 1889 and 1899 respectively. Illinois has, moreover, always exceeded Wisconsin in the production of wheat per square mile, producing over twice as much per square mile in 1899 as the latter state. Both states stood about on a par in 1899 in respect to per capita production, the figures being 4.35 bushels per capita for Wisconsin and 4.11 bushels per capita for Illinois. The very large population of Chicago, however, is a disturbing element and unduly depresses the per capita production of Illinois. From 1849 to 1879 Wisconsin produced a greater number of bushels per capita than Illinois,—exceeding the latter state about 50 per cent. in 1859 and more than 100 per cent. in 1869. Production per capita is in general the index of the degree of specialization and denotes the ability of a producing

area to export a surplus. Considering the fact that Wisconsin is primarily an agricultural state, as compared with Illinois, the decline per capita in Wisconsin is much more marked than in Illinois.[1]

In spite of the fact that Ohio was constantly held up before the wheat growers of Wisconsin as an awful example of over-specialization in the cultivation of that crop, conditions have in reality been relatively stable in the former state. In number of bushels produced, Ohio stood second in 1849, fourth in 1859, third in 1869 and 1879, fifth in 1889, and rose to third place again in 1899. In production of wheat per square mile, Ohio stood second from 1849 to 1889 inclusive with the exception of 1859, dropping to fifth place in that year. In 1899 Ohio held first place in this respect. On the other hand Ohio has never stood higher than ninth place in per capita production of wheat, which rank was attained in 1849. She held fourteenth place in this respect in 1859, 1879 and 1889, eleventh place in 1869 and thirteenth place in 1899.[2]

The present study is an attempt to describe the development of the wheat industry in Wisconsin, and to arrive at a conclusion as to the cause or causes of its meteoric rise and decline.

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[1] Of total persons engaged in gainful occupations, according to the *Twelfth Census*, (**2**, cxxxv) 36.8 per cent. were engaged in agricultural pursuits in Wisconsin, and only 25.7 per cent. were so engaged in Illinois.

[2] *Relations of Population and Food Products in the United States* in *Bulletin of U. S. Dep. of Agric., Division of Statistics*, No. 24. Washington, 1903. pp. 27–32.

CHAPTER II

CONDITIONS IN THE WHEAT INDUSTRY IN WISCONSIN BEFORE THE ADVENT OF THE RAILROAD.[1]

From the *Seventh Census of the United States* we have comparatively reliable statistics as to the wheat industry in Wisconsin just preceding the advent of the railroad. We have, further, overwhelming testimony as to conditions in respect to wheat culture in Wisconsin at that time. In the *Transactions of the Wisconsin State Agricultural Society* for the year 1851[2] we have a report on *Agricultural Condition and Capacity* that covers nearly all of the more important wheat producing counties of that state. This report is supplemented by numerous references in the columns of the *Wisconsin and Iowa Farmer and Northwestern Cultivator*, in the *Prairie Farmer*, and in the various local newspapers, local histories, pamphlets, etc.

According to the census of 1840, 212,116 bushels of wheat were produced in Wisconsin in 1839,* with an acreage of 15,151† acres. The crop of 1849 according to the *Seventh Census* amounted to 4,286,131 bushels, and the acreage had increased to 306,152 acres.[3] Practically the whole amount in 1849 was produced south of Green Bay and east of the Wisconsin River. Rock and Walworth counties together produced 33 1-3 per cent. of the total. The four counties of Rock, Walworth, Dane and Dodge produced approximately 50 per cent. of the whole crop.

[1] For characterization of the industry of Wisconsin in 1840-1844, see *Debow's Rev.*, 6: 303.

[2] P. 122 ff.

[3] According to the report of the Secretary of State of Wisconsin there were 306,152 acres sown to wheat in 1849. This amounts to about 30 per cent. of the whole area of improved land in Wisconsin at that time, according to the U. S. Census. These figures are much more significant when we recall that improved land includes "cleared land used for grazing, grass or tillage, or which is now fallow." *Seventh Census of U. S.*, XXII ff.

* See appendix, Table VI, foot-note reference.†

† See appendix, Table IV, foot-note reference.‡

Grouped according to regions we would have first, and by far the most important, the region in the southeastern part of the state, which found a market either at home in the local mills or in supplying the stream of newly arrived immigrants or else at the eastern lake ports of Milwaukee, Racine, Southport (Kenosha) and Port Washington; second, the Green Bay region, which found a market either at home or a little to the north, supplying the demands of the lumbering business, of the fisheries, and of the mines on the shore of Lake Superior, a small surplus being marketed east by the lake; third, the southwestern region, with a market either in the lead mining districts, or up the river at the military posts, Indian reservations and fur-trading stations, or else down the river at St. Louis; and last, the two small areas of production around Chippewa Falls and Hudson. How largely the surplus wheat moved to the lake ports is shown by the fact that Milwaukee, Racine and Southport (Kenosha) exported 2,678,045 bushels of wheat and 183,557 barrels of flour, equivalent to a total of 3,504,000 bushels of wheat, during the year 1849.[4] Transportation to the lake ports was exclusively by team and wagon. There were at this time a few plank roads from the more eastern counties to the lake, but these were only a little less unsatisfactory than the other roads, and the latter were likely to be impassable in the spring season. Reports of the Milwaukee market make frequent reference to this fact. It was said that it cost "18 pence" to send a bushel of wheat from Janesville to Milwaukee by plank road, whereas it was expected to cost less than 5 cents per bushel to send it to Chicago by rail.[5]

The farmers of Marquette county were compelled to haul their grain to either Milwaukee or Sheboygan, 80 or 100 miles. It took a week to make the trip to Milwaukee and back. With

[4] *Prairie Farmer*, **10**: 70.

[5] *Milwaukee Sentinel*, Jan. 30, 1849. How far this expectation came from being realized is proved by a complaint in the *Report on the Improvement of the Rock River* (1867) that the usual charge on a bushel of wheat from Janesville to New York was 63 cents and to Chicago or Milwaukee by railroad, 13 cents. See below p. 35, note 82 (b), where the shilling is used as equivalent to twelve and one-half cents. The "pence" would thus be valued at a little more than one cent.

desired improvements on the Fox and Wisconsin rivers, a market was anticipated either at New York or New Orleans.[6] Previous to 1851 the best market for the surplus wheat of Columbia County had been Milwaukee, but on account of the low price at that time the wheat would not bear transportation to that point and was disposed of at better advantage at the "Pinery."[7] In 1851 there were eight flouring mills in Dane County.[8] The surplus wheat went east to the lake ports, or south to Janesville which was the "center of a great milling interest."[9] Watertown was also the center of a considerable flour industry. It was estimated by the *Watertown Chronicle* that 125,500 bushels of wheat had been purchased and 26,000 barrels of flour manufactured in that town in the year preceding August, 1850.[10] Manitowoc county farmers did not produce sufficient wheat to supply home demands and hence received Milwaukee and Chicago prices with freight, pierage, dockage, drayage and commission added.[11] Walworth county surplus wheat was hauled to Milwaukee, Racine and Kenosha, 30 to 40 miles distant. The trip out occupied from one to one and a half days. The teams brought pine lumber and merchandise of various kinds in return.[12]

There has always been a strong sentiment in Wisconsin in favor of a home market. This has often been reflected in a favorable attitude toward a protective tariff and the development of home manufactures within the state. It found expression again, in a favorable attitude toward immigration into the state,—that producers and consumers might be brought closer together. Again, and especially in periods of stringency, it took the form of hostility toward the bringing in of eastern merchandise.[13] Complaint was made that double transportation charges were thus undergone. The home market argument ap-

[6] *Prairie Farmer*, **9**: 369.
[7] *Trans. of State Agric. Soc.*, 1851, p. 134.
[8] *Ibid.*, p. 151.
[9] *Prairie Farmer*, **11**: 480.
[10] *Milwaukee Sentinel and Gazette*, Aug. 3, 1850. See also *ibid.*, Mch. 1, 1850.
[11] *Trans. of State Agric. Soc.*, 1851, p. 180 ff.
[12] *Ibid.*, p. 225 ff.
[13] See *Wis. Farmer*, **14**: 61; *ibid.*, **18**: 256.

pealed to the wheat grower the more forcibly because when he found a strong demand for his grain at home he received the price at some other point plus the cost of transportation and distribution. When the time came that the supply exceeded the demand, he, of course, received the outside price less the cost of transportation. Continued immigration put off the evil day when this latter contingency would arise. The newly arrived immigrants had to be fed at first, even though they settled down and went to raising wheat themselves and thus became, later, competitors of the older settlers. In their turn, they depended upon further immigration for a market, or upon the growth of manufactures and the development of a wage-earning class. It is evident that the market found in immigration was self-destructive. This was the more true in a region that was peculiarly favorable to agriculture and where a majority of the immigrants, attracted by the opportunity of becoming land owners on easy terms, settled down as cultivators of the soil.[14] Not only did the newly arrived immigrant become a farmer, but he became a wheat farmer. Natural conditions of climate and soil favored, and, as we shall see, there were other conditions which lent their influence in the same direction. Furthermore, the development of manufactures requires considerable labor and capital, two factors that were scarce in frontier Wisconsin, just as they are scarce in every frontier region.[15]

Together with a keen appreciation of the advantages of a

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[14] Out of a total male population of 78,139 in professions, occupations and trades in Wisconsin in 1849, there were, according to the *Seventh Census*, 40,865 farmers, 11,206 laborers, 3,639 carpenters, 3,001 miners, etc.

[15] Milwaukee manufactures amounted in value to $1,714,200 in 1849. These included as the most important, in the order named, foundries; cabinet ware; leather; carriages and wagons; tin, sheet iron and copper ware; clothing; boots and shoes; wooden ware and wood turning; malt liquors. There were one steam and five water flouring mills, with a total capacity of 80 to 100 barrels per day.—*American R. R. Journal*, 1850, p. 344.

Racine was already becoming important in the manufacture of farm implements and machinery. Henry F. Cox and Company manufactured "H. Herdan's Patent Threshing Machine, Cleaner and Stacker." In 1849 Case erected his first shop in Racine and during that year he built nearly one hundred of his threshing machines. (*Wis. Farmer and Northwestern Cultivator*, Feb. 1850; *History of Kenosha and Racine Counties*, Chicago, Western Historical Company, 1879, p. 459.)

The value of home manufactures in Wisconsin is given by the census of 1850 as $43,624.

home market and of the losses involved in double transportation, the early wheat grower in Wisconsin combined an instinctive dread and distrust of monopolies, a common enough feeling on the democratic frontier.

The interests of the commercial class lie in just the opposite direction. Double transportation, not necessarily in an objectionable sense, is bread and butter for that class. It is not surprising then that the initiative for an outlet for the surplus produce of the state should have come from that class. Not until the home market broke down did the farmers of Wisconsin as a class come to the support of the movement for railroads. Even then there was a preference for plank roads,[16] and when finally they rallied to the support of railroads, it was not that the sentiment of that class against monopoly had disappeared but that it was taken advantage of by shrewd men who pointed out to them that they themselves should subscribe to the stock of the corporations and thus secure control of the roads.[17] The farming class thus made the mistake of trying to be interested in both farming and transportation, instead of seeing to it that there was effective control by the state. Notwithstanding the feeling against monopoly, there was no adequate appreciation of the real nature of railroad transportation. The relations between the wheat grower in Wisconsin and the common carrier, we shall take up in a later chapter. We need only to note here the early distrust of the latter by the farmer, the fact that he felt little interest in the railroads until the failure of the home market forced him to look for a market outside of the state, the further fact that to obtain the railroads he rashly loaned his credit, secured by land already heavily hypothecated, and lastly the fact of his complete and not unnatural ignorance of the principles involved in the system of transportation by rail.[18]

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[16] See pamphlet, *Plank Roads: Report on their Utility and Economy*, by a Committee, made to a large Plank Road meeting in Racine, Jan. 14, 1848. Racine, 1848.

[17] See Meyer, B. H., *History of Early Railroad Legislation in Wisconsin*, *Wis. Hist. Col.*, **14**: 222 ff. Also *Transactions of the Wisconsin Academy of Sciences, Arts and Letters*, **12**: 354 ff.

[18] See Meyer, *History of Early Railroad Legislation in Wisconsin* in *Wis. Hist. Col.*, **14**: 206 ff. See also Hibbard, B. H., *History of Agriculture in Dane*

Another difficulty, however, beginning about 1847, beset the wheat farmer in Wisconsin. Crop failure and decline in yield added to the difficulties of low price and the breakdown of the home market. It was possible for crop failure and overproduction to occur at the same time on account of the ever increasing area cultivated to wheat.

Numerous causes were assigned for this decline in yield and frequent crop failure. Among the most common of these were unfavorable seasons for both seeding and harvest, deterioration in seed, insect pests and successive cropping year after year to wheat without rotation. In respect to unfavorable seasons, it seems that to a certain extent this was true. It was noted, however, that there was little difficulty with crop failure on new land.

There was doubtless some truth also in the complaint about the deterioration of seed. The possibilities in plant breeding at the present time prove it more than likely that the general system of culture followed by these early wheat farmers, which was by all testimony extraordinarily bad, would also be deficient on the side of seed selection.

Insect pests are now considered to be destructive only where continued cropping is practiced and, therefore, need not be considered apart from that connection.

The one great cause assigned almost universally for the series of crop failures was that of so-called soil exhaustion due to continued and successive cropping to wheat. The present theory as to soil exhaustion strengthens our inclination to believe in the

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County, Wisconsin, Bulletin of the University of Wisconsin, No. 101, p. 134 ff. While making a study of the agriculture of Dane County, which he considers typical, in most respects, of the state, Mr. Hibbard discusses in an apparently satisfactory manner the general conditions throughout the state in reference to transportation about 1850. I am not disposed to entirely agree with Mr. Hibbard in his disparagement of the home market sentiment among the farmers. No doubt the possibilities of a home market were over-estimated by that class, but their later experience with railroads and the fact that after all they were forced into diversified farming wherein they depended more upon a home market and were less dependent upon the railroads seem to justify both their original preference and their suspicious attitude toward the latter. Mr. Hibbard himself has a little later vividly pictured the disappointment of the farmers in their hope that the railroads would minister to their interests. (See *Wisconsin Palladium,* June 26, 1852).

correctness of this opinion.[19] That such were ordinarily the results was of course familiar to most western people, from their knowledge of the soils in the older parts of the country. As early as 1845 a writer in the *Milwaukee Courier* sounded a note of warning.[20] "Wheat has thus far been the staple crop of Wisconsin and will probably continue to be so for some years to come. But we farmers will do well to remember before it is too late that we have hitherto been depending upon the natural fertility of the soil for the abundance of our yield rather than upon thorough tillage, rotation of crops, manuring, etc." Attention was called to the fact of declining yield in Ohio and Michigan, and an appeal was made to the farmers of "Walworth, Rock, Jefferson and other counties" for better methods of cultivation and an abandonment of continuous wheat cropping.

During the years 1849, '50 and '51, countless references can be cited testifying to the continued failure of the wheat crop and usually ascribing the failure to successive seeding to that crop: "We are confident that very many of our farmers would find it much to their advantage to turn their attention to dairying and let alone the growing of so much wheat. Wheat growing is now pursued greatly to the neglect of other branches of farm business."[21] "The wheat crop, our great staple, in many portions of Illinois and Wisconsin has proved essentially a failure

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[19] Many no longer believe in the theory that the chief difficulty lies in the removal from the soil of the elements necessary for the growth of the particular plant. Soil analysis of so-called exhausted soils reveals the presence of the required elements in quantities but little diminished. (See King, *Physics of Agriculture,* 80 ff. Also an article in the *Popular Science Monthly,* November 1905, by J. B. Dandeno of the Michigan Agriculture College, on *Soil Fertility.*) The tendency today is to lay less stress upon the chemical constituents of the soil and more upon its physical condition. That is, plant growth depends as much upon the rapidity with which the chemical elements which enter into combination for the nutriment of the plant are set free, *i. e.,* upon availability, as upon the absolute presence of those elements in the soil. Now the universal testimony is that continued cropping to one crop brings about such a condition of the soil that under ordinary conditions a decline in yield results. Proper rotation of crops, on the other hand, induces such a condition of the soil as renders the various elements most easily and rapidly available. (See *Trans. of State Agric. Soc.,* 1851, p. 191. See, however, Hopkins, Cyril, G., *Phosphorus and Humus in Relation to Illinois Soils, Circular No. 116,* University of Illinois, Agricultural Experiment Station, Urbana, Feb., 1908.)

[20] *Mineral Point Democrat,* May 2, 1845.

[21] *Wis. Farmer and Northwestern Cultivator,* 1: 144.

for three years in succession. . . . Wheat growing has proved utterly untrustworthy. . . . It is more unprofitable than either of the three great divisions of northwestern agriculture,—pork raising, stock growing and dairying. . . . For several years wheat in every stage has been doomed to double risk, labor and expense, while the market has generally been at a low point in consequence of the almost illimitable amount produced and the inferior quality of a large share, and yet here it is all wheat, wheat, wheat, etc."[22]

"While we are reaping an average of 15 bushels of wheat per acre, we can with proper management produce twice or even three times that amount. When the farmers get over the grain mania and turn their attention to the growing of stock, so as to escape the influence of the fluctuations of the seasons and markets, no longer will be heard the cry of hard times, etc."[23]

"Walworth County Wheat Crop.—Winter wheat has been most gloriously uncertain for a long time. . . . Lately spring wheat has been also very uncertain. For several seasons in succession the wheat crop has fallen miserably short either in quality or quantity, causing great loss and embarrassment to our farmers."[24]

In the report on the "Agricultural Condition and Capacity" of the various counties of Wisconsin referred to above, testimony is well-nigh unanimous as to the recent failure of the wheat crop. In Iowa county winter wheat had been gradually failing for five or six years. The average yield in 1851 was 15 bushels for winter wheat and 12 bushels for spring wheat.[25] In Columbia county the crop had been short for two or three years.[26] Dane county had experienced an almost entire failure for four years.[27] Similar testimony came from Dodge county.[28] Fond du Lac county

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[22] *Wisconsin and Iowa Farmer and Northwestern Cultivatar*, **2**: 216. See *ibid.*, 263.

[23] *Ibid.*, **1**: 210.

[24] *Wis. Farmer and Northwestern Cultivatar*, **1**: 248. See also *ibid.*, **3**: 2; *Cf.* also *Prairie Farmer*, **9**: 271; *Wis. Farmer*, **3**: 145.

[25] *Trans. of State Agric. Soc.*, 1851, p. 106.

[26] *Ibid.*, 133.

[27] *Ibid.*, 153.

[28] *Ibid.*, 163. U. S. Pat. Office Rep., *Agriculture*, for 1850, p. 8.

reported partial failure of the wheat crop for several years.[29] Reports from Jefferson, Kenosha, Racine, Rock, and Walworth counties vary only in the degree of failure indicated.[30]

Another fact to be noted in this connection and which added to the seriousness of the situation was that crop failure occurred in respect to winter wheat in particular and at that time winter wheat was worth from 10 to 15 cents, and sometimes from 18 to 20 cents more in the market than spring wheat. With the old milling processes, the hard, brittle bran of the spring wheat was broken into fine particles and could not be satisfactorily separated from the flour. When winter wheat passed safely through the winter it usually yielded well, but by 1850 it had become an extremely uncertain crop in the Northwest generally.[31] Winter wheat was, however, successful in Winnebago county, an average of from 20 to 40 bushels per acre being secured. This was a comparatively newly settled region and the evil effects of continued cropping to wheat were not yet apparent.

What were the causes of this persistent tendency to grow wheat exclusively? To this question we have many contemporaneous answers, and there is a very general agreement in respect to the causes assigned. These were, in general, the scarcity of labor and capital on the one hand, and the great plenty and cheapness of fertile land on the other, together with the fact that wheat has always been a great cash crop.[32]

Here again it seems clear that we can endorse contemporaneous opinion. Of course there were other contributing causes and it is also possible to make a more refined analysis of the causes

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[29] *Trans. of State Agric. Soc.*, 1851, p. 106.

[30] *Ibid.*, pp. 170, 177, 187, 210, 225, and 230. In reference to the failure of the wheat crop in the Northwest generally, see *Prairie Farmer*, **9**: 271; **10**: 278, 73, 137, 349; **11**: 429–430.

[31] But little winter wheat had been sown in the Northwest (crop of 1849–50) on account of continued losses. *Prairie Farmer*, **10**: 18, 233, 259, 266, 278–9; **11**: 56.

[32] For a most excellent discussion, *Considerations on the causes and effects of the diminution of American Crops*, by Gustavus De Neveu of Fond du Lac, Wis., see U. S. Pat. Office Rep., *Agriculture*, for 1858, pp. 213–220. The cause is asserted to be sparseness of population. "As long as there shall remain vast tracts of unoccupied virgin soil, of exceeding fertility, to be had for a low price, so long must agriculture be carried on in a loose and careless manner, particularly in the neighborhood of those lands."

generally assigned as the main causes. At first sight and in consideration of the more evident specialization in wheat after the introduction of railroads, the problem might seem to be one of transportation primarily. This, however, is plainly incorrect; for we find this specialization existing with all the concomitants of declining yield, crop failure, and consequent agricultural depression before there was a mile of railroad in Wisconsin. As to other methods of transportation, we have seen that early conditions in transportation were not such as to encourage the production of wheat, notwithstanding the fact that access to Lake Michigan gave an outlet to the East. It can be granted, however, that increased facilities for transportation gave an added impetus to a tendency that had its origin in the other conditions mentioned.

It may be argued that overspecialization in the culture of wheat was due to the fact that natural conditions are peculiarly adapted for growing that grain.[33] But this can hardly be maintained in the face of the fact that other branches of agriculture have been shown to be just as well adapted to natural conditions in Wisconsin as wheat, perhaps even more so.[34] Natural adaptation was, of course, a contributing cause. The tendency to produce wheat exclusively was due primarily to the conditions mentioned above, and these conditions have always been present to a greater or less extent on the frontier. That these conditions should have borne fruit to an unusual degree was due to the fact that circumstances were peculiarly favorable. Most of the settlers who took up land in Wisconsin were persons of small means[35] and the opportunity of becoming the possessor of large tracts of fertile land on easy terms, so that one crop would almost pay for the land itself in addition to the expenses involved in the cultivation of the crop, invited an undue extension of credit, to the end that more and more land might be secured. This in its turn put a premium on extensive cultivation and for this

[33] See *Soil Map of Wis., Twenty-second Ann. Rep. of Agric. Exper. Station of U. of Wis.*, 1905, pp. 262–263.

[34] Dairying and the culture of oats, barley, rye, tobacco and hops might be mentioned in this connection.

[35] *Trans. of State Agric. Soc.*, 1851, p. 133.

sort of culture wheat is peculiarly adapted on the frontier. It required but relatively little labor and capital and with the most careless methods of cultivation yielded large returns at first.[35]

Further, no commodity that the early farmer in Wisconsin could raise had such a ready sale. It was as "good as money"—actually passed as money in many cases.[37] A glance into the files of the newspapers of the period will show how largely wheat passed for a medium of exchange. Not only was it the best cash crop but it could be traded for such articles of merchandise as the farmer needed. The wheat was often stored in private warehouses and wheat "receipts," "tickets," or "certificates," as they were variously termed, were issued, and passed from hand to hand like money. The phrase "as good as wheat" was a current expression at this time.[38] In Racine, wheat in the warehouses served "as a basis of frequent and large business operations" during the months when the lake navigation was closed.[39]

A writer in the *Prairie Farmer*[40] says "the wheat crop is the great crop of the Northwest for exchange purposes. It pays debts, buys groceries, clothing, lands, and answers more emphatically the purposes of trade than any other crop." Again, "Well, we have a wheat crop once more. We can now pay our debts, build us houses, barns, fences, etc."[41]

Instances might be multiplied many fold to show to what extent wheat was depended upon as a cash crop for the means to meet interest payments or debts, or to trade for necessities. That land was secured on liberal terms should not deceive us. These liberal terms were fully discounted, and, at any rate, the term "liberal" must be interpreted in the light of the financial cir-

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[35] See *Northwestern Miller,* Nov. 8, 1878, for similar case in Minnesota. See also Pat. Office Rep. *Agriculture,* for 1850, p. 8.

[37] See *Governor's Message and Accompanying Documents,* 1857, 2: 429.

[38] "Such has been the system of barter (in Fond du Lac county) that it would be difficult to say what has been the price." *Trans. of State Agric. Soc.,* 1851, p. 167.

See also *Southport American* for June 29, 1843; February 7, 1849; Mch. 28, 1849. See *Prairie Farmer,* 10: 165.

[39] *Sen. Miscel. Doc.,* No. 60 (p. 14), 31st Cong., 1st Sess., (Communication from Philo White, in behalf of the citizens of Racine, Wis., showing the necessity of continuing the improvement of the harbor at that place, Feb. 27, 1850).

[40] *Prairie Farmer,* 10: 52. See also *Ibid.,* 258 and 278.

[41] *Ibid.,* 266. See *Trans. of State Agric. Soc.,* 1851, pp. 133, 161–162.

cumstances of the purchasers. Interest rates were as high as land was low and the cheapness of the latter merely enticed the settlers to go more deeply into debt in order to extend their purchases.[42] The bad conditions in reference to insolvency and indebtedness about 1850 led to the appointment of a judiciary committee by the assembly to investigate and bring in a report, with a view to revising the usury laws.[43] Both majority and minority reports agree as to the general distress, though differing as to remedies proposed. Particular mention is made of the farming class. They are said to have borrowed money for improvements, relying upon their crops in order to meet their obligations. When harvest time came their crops failed and as this had been a universal occurrence for two years, the burden kept growing heavier, without any means of relief being found.

A committee appointed the same year on "Land Limitation" found[44] that for at least three years the farmers of Wisconsin had suffered either from short crops or from injuries to grain in harvest or from the difficulty of getting the grain to market because of bad roads. It was suggested that the difficulty was partly the result of land monopoly. "Farmers tilled such large fields that they could not attend to them properly." A mild sort of limitation on the amount of land that could be held by one person was favored.[45]

The general situation is well set forth by one who contributed frequently to the discussion of farm topics. After noting the "mania among the Northwest upon the culture of wheat" in consequence of which the "health, comfort, happiness and the general interests of the community are but secondary considerations to the waving field of grain, which in their estimation is

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[42] "Another cause of depression is the prevailing indebtedness. The early settlers had limited means, and good crops and high prices tempted them into indebtedness. Then pay day and short crops came at the same time and the results were ruinous. Homesteads were involved at rates of interest varying from fifteen to fifty per cent. California seems the only resource and to that gilded region many a Walworth county farmer is preparing to flee as to a city of refuge." *Trans. of State Agric. Soc.*, 1851, p. 230.

[43] *Appendix to Assembly Journal*, 1851, pp. 1047–1101.

[44] *Ibid.*, 1105–1109.

[45] See Gregory, *The Land Limitation Movement* in *Parkman Club Papers*, **2**: No. 14.

equal to the golden harvest of California," the writer asserted that this specialization was common in all new countries and was due to poverty. "The early settlers must resort to the means which promise the most sure and speedy return for their labor; and the cultivation of wheat promises them under ordinary circumstances the highest rewards for their labor, the best investment for their capital. That article always commands cash at some price and necessarily excludes many other productions from the market. This concentration of labor and capital in the production of wheat leads to overproduction and defeats the object in view, while the community is injured by the withdrawal of labor and capital from other branches of agriculture." An appeal was made to farmers to follow a more diversified system.[46]

W. W. Daniells,* Professor of Chemistry and Agriculture at the University of Wisconsin, summed the matter up as follows: "People are everywhere saving of the costly factor and extravagant of the cheap factor; hence the early agriculture in Wisconsin was mere land skinning. Better tillage, accompanied with the use of manures and other fertilizers, would not, upon the virgin soil, have added sufficiently to the yield to pay the cost of applying them. Hence to the first farmers of the state, poor farming was the only profitable farming and consequently the only good farming, an agriculturo-economical paradox from which there is no escape." Still, Professor Daniells maintains that such a system was injurious to the state, and he might have added, ruinous to the farmers themselves in the long run.[47]

In a study of the *Economic and Social Development of Kenosha County,* Robert Hugh Downes finds[48] that the towns inhabited by foreigners held to the cultivation of wheat, oats and Indian corn, while those inhabited by natives went into the dairy business. He concludes that the decline in the population and the smallness of cash value and total valuation per capita that was

[46] *Wisconsin and Iowa Farmer and Northwestern Cultivator,* **2**: 263, by Solomon Lombard.

[47] *History of Racine and Kenosha Counties, Wis.,* Chicago: Western Historical Co., 1879, p. 153.

[48] *Trans. of Wisconsin Academy of Sciences, Arts and Letters,* **13**: 545 ff.

*Now Emeritus Professor of Chemistry.

found at a later period among the former class when compared with the latter was due not so much to the soil as to the nativity of the people and that the Germans, English and Irish evidently lacked the ability to adapt themselves to the economic changes and to agricultural improvements; and that, on the other hand, the native-born took advantage of such changes and improvements and thus bettered their condition.

It is not clear, however, that this attempt to make persistence in the culture of wheat a question of race characteristics can be justified. In the first place the Germans and English pursued better methods of cultivation at home than those followed by farmers in the eastern part of the United States, whence came the native settlers. Again, there is no contemporaneous testimony that foreign settlers were in general greater sinners than the natives in the constant cropping to wheat alone or that their methods were inferior. On the contrary, direct testimony is borne to the industry and careful tillage of both English[49] and German[50] settlers. Much is said, however, in disparagement of the "French system" of cultivation. The foreign settlers had even smaller resources than the natives[51] and were, thus, on account of financial reasons less able to adapt themselves to new conditions or to change their methods.[52] Accordingly, financial difficulties would appear to still remain the ultimate cause of the one-crop system.

On the other hand, the native element was habituated to the growing of wheat. The wheat crop declined 50 per cent. in New England, and 25 per cent. in New York during the decade 1840–1850,[53] and immigrants from these two sections, and especially from New York, which had been shortly before the center of the

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[49] Hibbard, *Hist. of Agric. in Dane Co.*, 127. See also Pat. Office Rep: *Agriculture* for 1852, p. 331.

[50] *Trans. of State Agric. Soc.*, 1851, p. 234. Also Gregory, *Industrial Resources of Wis.*, 1853, p. 62.

[51] Hibbard, 90. See senior theses of the University of Wisconsin referred to just below.

[52] See *Bulletin* No. 60, U. of W. Agricultural Experiment Station, pp. 17-18, *The Cheese Industry: Its Development and Possibilities in Wisconsin*, which appears to support the position taken here, so far as the cheese industry is concerned.

[53] *Wis. Farmer*, **10**: 337.

wheat growing area, constituted a very large proportion of the early settlers of Wisconsin.[54] It is not unreasonable to suppose that there was a close connection between the arrival of these New England and New York settlers and the subsequent specialization in wheat growing. This presumption is strengthened by the further fact that the later movement of the wheat area across Wisconsin was accompanied by a similar movement of the New England and New York element. That element declined proportionately and to such an extent as to indicate large migration in those counties where wheat growing declined, while the foreign element, especially the Germans, increased largely.[55] Further, it is found that the New York and New England settlers predominated in the prairie regions, which were best adapted to wheat growing, while the foreign stock was most numerous in the wooded districts.[56] This tendency toward wheat growing due to economic habit was, however, strongly reënforced by economic conditions on the frontier. In fact, the latter decidedly prevailed where the two ran counter. This fact is illustrated by the slow progress made in the attempts by the Ohio settlers to introduce the tobacco growing and the wool growing industries.[57] The Swiss element, too, yielded to the influence of early economic conditions, until the acquired habit of wheat growing gave away, in turn, before changed economic conditions which induced a reversion to dairying.[58] In like manner, the Scandinavian element in Dane county acquired the habit of wheat growing to such an extent that upon the failure of the crop in that county about 1870, many sold off their farms and

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[54] MSS. Senior Theses, University of Wisconsin: Blackburn, A. W., *Some Social and Economic Factors in the Development of Racine County,* (1901); Sherrill, Jennie Bentley, *History of the Eastern Half of Columbia County,* (1902); Harrigan, Frank Elwood, *The Economic and Social Factors in the Development of Dane County* (1901); Chamberlain, Alice Emily, *History of Dodge County, Wisconsin, for the period, 1850-1870,* (1902); Fish, Herbert Clay, *The Movement of the New York and New England Elements of the Population of Wisconsin in the periods, 1850 to 1860, and 1860 to 1870* (1903); *et al.*

[55] *Ibid.*

[56] Graham, James Blain, *An Economic and Social Study of the Population of St. Croix County, Wisconsin, during the period, 1850-1870.* MS. Senior Thesis, Univ. of Wis., (1901). See Hibbard, pp. 107-112.

[57] Hibbard, 145.

[58] See below, p. 77, notes 18 and 19.

like the native stock moved on toward the frontier and were replaced by the Swiss, who introduced dairying. After about 1891, however, the Scandinavians succeeded in adapting themselves to dairying and again increased their holdings of land within the county and in the year 1898 over 80 per cent. of the total cheese product of Dane county was produced in the seven towns which comprised the Scandinavian section in the western part of the county.[59] Economic habit and race characteristics are thus seen to have been subordinate factors, but to have exercised a strong influence when reënforced by favorable economic conditions.

We have concrete examples of the financial difficulty involved in making the change to a diversified agriculture. One such is given in the *Wisconsin and Iowa Farmer and Northwestern Cultivator*.[60] A correspondent, in discussing the comparative profit of wheat growing and sheep raising, stated that he had made a success of wheat growing from 1837 to 1847. Then followed crop failures for three years, with unsuccessful attempts to go at something else, want of success being due to lack of means. In 1851 he succeeded in borrowing money and going into sheep raising, which proved profitable.

If indebtedness and lack of capital kept many farmers raising wheat exclusively until crop failure and soil exhaustion ensued, the latter conditions were in their turn instrumental in forcing a system of diversified agriculture. When the time came that wheat could be no longer raised at a profit, some other means had to be found to get money to meet interest payments and taxes. Declining profits constituted a sufficient reason for inducing those in better circumstances to turn away from specialization in wheat. It appears that this latter class was the first to try something else. The former in many cases merely went into bankruptcy.

That the Wisconsin State Agricultural Society was organized about this time is significant. Farmers were aroused to the fact that something needed to be done. For a long time there had

[59] Michelson, Albert G., *The Scandinavians in Western Dane County*. MS. Senior Thesis, Univ. of Wis., 1901.

[60] 6: 247.

been exhortation in favor of diversified farming and crop rotation. An organized effort was now to be made to improve conditions in general. The direct statement is made in reference to the Rock County Agricultural Society that it was founded in order to overcome the depression which had followed the failure of the wheat crop. This forced tendency to diversification was naturally most marked near the markets in the earlier settled portions where soil exhaustion had been carried farthest and where opportunities were most favorable for such change. The rise in the value of land forced a better and more intensive system of agriculture. Land became relatively more valuable as compared with the other factors in production and farm pursuits that were less expensive of land began to find favor. It was recognized by many that the failure of the wheat crop might prove a blessing in disguise if it compelled a better and more varied system of agriculture. In 1851 a successful attempt was made to grow flax in Dane county,[61] though results were not favorable in other parts of the state. Attempts were made at sheep raising about the same time in Dane county.[62] In Kenosha county the wool growing industry had begun to attract the attention of the most enterprising farmers and some attention was also paid to dairying.[63] An Ohio farmer traveling in Waukesha county at this time declared that the farmers there had better sow less wheat and grow more wool.[64] Reference has already been made to individual attempts to grow wool.[65] Experiments in the culture of tobacco had been made in Rock county about 1840 and now these experiments were renewed in several of the southern counties.[66] Farmers were abandoning wheat growing as an exclusive crop in Walworth county and large fields were being sown with tame grasses preparatory to a more general rearing of stock.[67] In Dodge county a system of rotation

[61] Hibbard, 147.
[62] *Ibid.*, p. 145. For hop culture in Wisconsin at this time see *ibid.*, p. 149.
[63] *Trans. of State Agric. Soc.*, 1851, p. 179. See also Pat. Office Report, *Agriculture*, 1851, pp. 464-465.
[64] *Ibid.*, 235.
[65] *Supra* p. 30.
[66] Hibbard, 156.
[67] *Trans. of State Agric. Soc.*, 1851, p. 230.

had produced very satisfactory results,[68] and in Racine county the shrewdest farmers were said to be more and more diversifying their crops.[69] In Milwaukee county farms were smaller and better cultivated than on the prairie and diversified farming was followed to a considerable extent.[70] Dane county imported, besides agricultural implements and foreign merchandise, "cheese, butter and pork frequently, grass seed, cattle and horses."[71] Evidently there was room for diversification here.

The use of improved farm machinery had become important by this time, though the numerous advertisements of cradles and rakes in the local newspapers indicate that the harvester was by no means general. This was especially true in the "oak openings" where it was difficult to use machinery on account of the stumps.[72] According to the Ohio traveller mentioned above, the McCormick reaper was in general use in Waukesha county. It was asserted that in five years very little wheat would be cut otherwise than by machinery on the smooth lands of the West.[73] Complaints were made, however, that the new machines came high in price, that they were not always constructed of good material, and the familiar statement was made that they failed to do satisfactory work in lodged grain.[74] It was estimated that not less than 3,500 new reaping machines would be put into use in

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[68] *Ibid*, 163. See also Pat. Office Rep., *Agriculture*, 1850, p. 8.

[69] *Ibid.*, 194.

[70] "Land is scarce and every reason impels to cultivate it well. Manure is made use of. The farmer is obliged to diversify his crop, as wheat is almost a total loss one year out of five and a failure more or less extensive the other four years. To depend on wheat here would be perfect madness. The farmer here must have a little of everything that will sell—a little mutton, a little wool, veal, butter, eggs, potatoes, wheat, straw, barley, wood, and, in fact, a multitude of things."—*Prairie Farmer*, **9**: 290.

[71] "This policy is ruinous and will conduct to inevitable bankruptcy. My advice is to keep out of debt, change and improve your mode of husbandry, own and cultivate less land and expend your profits on your own farm."—T. T. Whittlesby, *Trans. of State Agric. Soc.*, 1851, p. 162.

[72] *Prairie Farmer*, **10**: 34. See also Hibbard, p. 123 ff.

[73] *Prairie Farmer*, **10**: 30, contains a list of reapers and headers used in Illinois, many of which were probably used in Wisconsin as well. Among these appears Esterly's "header", invented by George Esterly of Heart Prairie, Wisconsin. See Pat. Office Rep., *Agriculture*, 1851, pp. 460-462, for an article by Esterly on harvesting grain in the West, with estimates of the saving in cost by the use of reapers.

[74] *Wis. Farmer and Northwestern Cultivator*, **1**: 249; *Prairie Farmer*, **10**: 34.

1850 in the Northwest, and it was calculated that this would amount to a saving of the labor of 175,000 men. This was of importance in view of the fact that the labor supply was being diminished by emigration to California.[75]

Wheeler's "tread machine" threshers had been introduced extensively into Illinois, Iowa, and Wisconsin about 1850; and had competed successfully with the larger "sweep machines" of eight horse power and operated by eight men.[76] Reference has already been made to the manufacture of the Case threshers in Racine and the advertisement of the Case two-horse power thresher appears in the pages of the farm journals of that period. Bain's thresher was another Racine product.

The introduction of these labor saving machines constituted an important factor in the spread of the wheat area. An industry toward which there was already a strong tendency, due in part to the fact that it required a relatively small amount of the scarce factor, labor, became now less than ever dependent upon that factor. The effect was decidedly toward more extensive culture, and when a little later the railroad opened up a market for Wisconsin wheat, the grain drill, the harvester, the header and the thresher were all at hand to assist in the phenomenal spread of that industry in the state.

According to the census of 1850, there were 1,045,499 acres of improved, and 1,931,159 acres of unimproved land in Wisconsin. Comparison with the corresponding figures for 1900—11,246,972 improved and 8,615,755 unimproved—indicates how small a portion of the area of Wisconsin had been brought under cultivation and pasturage at the former period. Up to this time government land had been secured at about the minimum price of one dollar and a quarter per acre, and so long as this land was in the market there was little opportunity for speculative dealing. This opportunity had been taken advantage of and the increase in population in Wisconsin between 1840 and 1850 was almost unprecedentedly rapid. The editor of the *Wisconsin Farmer and Northwestern Cultivator*,[77] in an answer to the in-

[75] *Ohio Cultivator*, July 15, 1850.
[76] *Prairie Farmer*, 10: 21.
[77] 2: 44, Feb. 1850.

quiries of a prospective immigrant, stated that he "knew of no land south and east of the Wisconsin River that could be bought for less than about five dollars per acre.[78] Sales of improved land had been made at twenty-five dollars per acre, while the cheap and fertile lands west of Lake Winnebago proved most attractive to settlers. This latter region was being settled more rapidly than any other part of the state."[79]

A land agent in Milwaukee advertised two hundred thousand acres of choice lands for sale in the State of Wisconsin in 1850 at from one dollar and fifty cents per acre upwards, in lots to suit purchasers and on liberal credit. Fifty thousand acres of this land consisted of lands from one to four miles from the Fox River. One thousand acres were located from one and a quarter to three miles from Milwaukee. In addition, there were one hundred improved farms in Milwaukee county in the lot.[80]

Hibbard states[81] that it was during the early 50's that the greater part of the state lands was sold, and calls attention to the detriment to the state treasury, and to the injustice to the later settler in disposing of the lands at such low figures. He might have added, what has already been noticed, that the settlers themselves were hardly benefited by these low prices; that it merely induced them to take up more land than they could readily pay for and cultivate properly, and that it was the prime cause of exclusive cropping to wheat, with all the accompanying evils.

In the midst of the general cry of distress, occasional successful ventures in wheat raising were announced, and we must remember that not a few persons in poor circumstances took advantage of the opportunity to secure the cheap, fertile lands and by careful management gained a clear title and became pros-

[78] This must have referred to improved lands, for Ritchie, *Wis. and Its Resources*, 1857, p. 111, stated that but one-sixth of the land of Dane county was then settled.

[79] *Wis. Farmer, supra*, Note 77. See also *Prairie Farmer*, 9: 288-289.

[80] *Wisconsin and Iowa Farmer and Northwestern Cultivator*, 2: 211.

[81] Page 104.

perous and well-to-do citizens.[82] Apparent success was obtained in most cases, however, by compromising the future and by a reckless system of soil exploitation.

Whatever may have been the conditions in specific cases it is undeniable that conditions were very discouraging for the Wisconsin wheat farmer in general at the period which we are considering. Low prices, crop failure, high cost of transportation and the break-down of the home market were about to force him into a more diversified system of farming. But habit, and financial difficulties and embarrassments conspired to prevent the change. Under these conditions, the argument for an outside market, to be reached by a system of transportation on the one hand demonstrably effective and on the other adroitly asserted

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[82] (a) "Wheat raising in Crawford County. The results are for forty-five acres of wheat harvested in this county in the fall of 1849.

Cost of preparing the ground, sowing and harrowing	$80 00
For seed wheat	35 00
For harvesting and threshing	160 00
Total expenses	$275 00
One thousand and sixty-five bushels of wheat at 63 cts. per bushel	$670 95
Net profits from the crop	395 95

"To the expenses incurred may be added the expense of drawing to market and some other small items which would probably reduce the net proceeds, if every item were paid in wages, to about $450" [$350?].

Wis. Farmer and Northwestern Cultivator, 2: 11.

(b) "Report of 300 acres of winter wheat grown by Mr. Carey in Rock county, ten miles from Beloit, on Jefferson Prairie:

300 acres of land at 10 s. per acre	$375 00
Fencing	300 00
Breaking at 14 s. per acre.....	525 00
Seed, 1½ bu. per acre at 5 s. per bu.....	281 25
Sowing and harrowing at 8 s. per acre.....	300 00
Harvesting and stacking at 10 s.....	375 00
Total cost in stack	$2,156 00
Yield estimated (partly threshed) at over 6,000 bushels. Deduct 600 bushels (1-10 for threshing and cleaning) and add	810 00
the cost of transporting 5,400 bushels to Southport (55 mi.), computing the cost of hauling and delivering it at 15 cts. per bushel, and you have	2,996 25
as the total cost. Sold at 60 cts., or	3,240 00

Net gain (not counting for labor) 300 acres of good land, well fenced and thoroughly improved and $243.75 in cash."

Southport American, Nov. 25, 1843.

to be under his own control, overcame the farmer's scruples against railroads. He hastened to pledge his already encumbered land for the completion of the proposed enterprise or was forced into such action by methods that were often of the most questionable character.[83] A rise in the price of wheat occurring a little later, due to outside causes, plunged him back into the old rut of exclusive wheat culture and sent him on "a new crusade in search of wheat land."[89]

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[83] Meyer, *History of Early Railroad Legislation in Wisconsin, supra.*
[89] Hibbard, 130.

NOTE.—The Sixth Census of the United States gives the following statistics of the production of wheat in Wisconsin, by counties. It is, however, uncertain whether the figures are for the crop of 1839 or for the crop of 1840. [See *History and Growth of the United States Census,* by Carroll D. Wright and William C. Hunt, p. 32. (Washington, 1900)]. For alleged gross inaccuracies in the Sixth Census see *House Reports,* 28th Congress, 1st Sess., vol. III, No. 580:

Brown	7,614	Marquette	.....
Calumet	1,192	Milwaukee	34,236
Crawford	2,092	Portage	1,815
Dane	290	Racine	36,099
Dodge	.....	Rock	24,702
Fond du Lac	320	Sauk	464
Grant	10,796	Shehoygan	548
Green	11,953	St. Croix	74
Iowa	12,945	Walworth	59,560
Jefferson	6,647	Washington	182
Manitowoc	225	Winnebago	362
Total			212.116

PART II

THE WHEAT INDUSTRY IN WISCONSIN AFTER 1850

CHAPTER I

THE DECADE 1850–1860

Before taking up the history of the wheat industry after the advent of the railroads, we must note two other factors of importance in the rapid spread of that industry. The first of these two factors is the natural adaptability of most of the soil of Wisconsin for the cultivation of wheat, and was, of course, important from the first. The whole southeastern part of the state is composed of a rich limestone clay, largely glacial in origin. The southwestern portion of the state is also clay, residual in origin, but covered in the western part with loess. The Green Bay-Lake Winnebago region is also composed of clay of a high order of fertility, though requiring artificial drainage. The central portion of the state is composed of a variety of soils, chiefly sandy and sandy loams, not so durable as the clays nor so well adapted to wheat, but still productive in their virgin condition. Stretching northward along the Mississippi River is a succession of sandy loam and clay soils, with the latter predominating. These soils also have been enriched by deposits of loess.[1]

The second of the two factors referred to, is the generally nonforested nature of the southern and western portions of the state, which consisted for the most part of "oak openings" and prairie. This second influence was not without its effect previous to 1850, but was chiefly important during the following two decades. The prairies were not generally cultivated until shortly after 1850.[2] A comparison of the map[3] showing the development of railroads during the first two decades after 1850,

[1] See the *General Map of the Soils of Wisconsin* in the *Twenty-second Ann. Rep. of the Agric. Exper. Station of the U. of Wis.*, for 1905, between pages 262 and 263.

[2] Hibbard, *Hist. of Agric. in Dane Co.*, p. 105 ff.

[3] See Figure 9. [All numbered tables and figures are found in the Appendix.]

and of the charts[4] representing the movement of the wheat area during the same period, with the map in the *Tenth Census of the United States*[5] showing the distribution of the forest area in Wisconsin brings out a striking connection. The growing of wheat to an excessive degree in Wisconsin has been largly confined to this, in the main, non-forested area. In these counties, the lumber industry did not divide attention with wheat growing.[6] There was no heavy nor tedious labor involved in clearing the land. There were few stumps to interfere with the use of machinery. The land could thus be brought under cultivation with very great facility, and we are quite prepared to understand the extraordinary rapidity of settlement, and spread of population that occurred a little later under the combined stimulus of railroad construction and the rise in the price of wheat.

In the previous chapter, conditions as they were about 1850 have been described. These conditions continued in a general way until 1854, although the crop of 1853 was much better than those of the years just previous.[7] The year 1854, however, brought a bounteous crop, while in the meantime there had occurred a marked rise in the price of wheat.[8] Under the combined influence of these circumstances, together with the added impulse given by the construction of railroads, there ensued a period of the greatest prosperity.[9] This was at first most marked

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[4] See Figures 1-3.

[5] 9: 554-55. See also the map of the forest area in Wisconsin, in the front of the *Trans. of State Agric. Soc.*, 1860.

[6] This is not strictly true with respect to the river counties.

[7] Wheat in Fond du Lac and Grant counties yielded about 20 bushels per acre, while the yield in Waukesha county was from 20 to 40 bushels per acre. Pat. Office Report *Agriculture*, 1853, pp. 152-153.

[8] See tables VIII-X. See also p. 36 above, and p. 46 below.

[9] "Abundant harvests, which under Providence have burthened our fields in every portion of the state, have been made still more welcome from the increased market value over the products of former years." (*Trans. of State Agric. Soc.* 1854, '55, '56, '57, p. 17). "In quantity and quality, the products of our state have never been surpassed, while a ready sale, and high prices have awaited the farmer at his own door." (*Ibid.*, p. 72.) "Every department of business is found to be in a highly prosperous condition, owing mainly to the fact of good crops of all the principal varieties of grains and vegetables, together with good market prices for them. . . . Superadded to the whole, was the quickening spirit of railroad extension in various directions into the interior of the state. All these various causes working together nat-

in the southern part, but rapidly spread to the remaining portions of the state. Mortgages were lifted and other debts discharged. Banks sprang up and currency flowed in. There was a boom in real estate, and land values soared upwards. All classes shared in the prosperity. Speculation set in and added to the ever quickening movement until confidence reigned supreme and the return of the old-time depression was scouted as an impossibility. In connection with this extraordinary activity, and, indeed, as an essential part of it, there occurred one of the most remarkable movements of population into a new region in the history of the United States. Immigration poured in. The land offices were thronged, and thousands of entries were

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urally produced an extraordinary buoyant state of feeling among all classes. Large amounts of currency being necessary, new banks started up on all hands like mushrooms. . . . Probably a fifth was added to the breadth of the fields of the state during the year and not much if any less to the population. Many farmers invested their surplus gains in additional lands which as a general thing they did not need, already having more than they could farm properly. . . . But the constant upward tendency of lands in price marked them as a favorite investment for all who could avail themselves of the means to buy." . .

"The speculative spirit unsettled conditions and made them unstable . . and this state of things naturally brought even a greater degree of instability than had previously existed, although instability and change are the characteristic faults of all new countries. Nearly everything in the way of real property came to be held for sale and when bought it was usually to sell again; . . . Thus, flush and good times, first felt in 1854, among our people, laid broader and deeper those feelings of speculation and unrest which had always existed though measurably dormant; and hence while the amount of active wealth in circulation, stimulated some few to solid, substantial and permanent improvement, irrespective of the idea of selling out, still much greater numbers, only aimed at adding acres to their already unimproved acres and fitting up, if at all, in a superficial, cheap and showy way like a jockey horse simply for sale . . " (*Ibid.*, p. 101 ff.)

"We said the farmers are enjoying the good time. All the industrial classes are enjoying the same good. The fulfillment of that modest prediction (predicted by the late President of the Society, Hon. J. T. Willard in 1853) is being realized most gloriously. Fortune and plenty is vouchsafed to them all, stacks of grain crowning the ample fields of every farmer, granaries filled to overflowing, money plenty, old mortgages drawing from 12 per cent to 50 per cent interest, cancelled and discharged of record—surplus funds deposited with gentlemanly bankers of our own county, in banks that never dream of failing—some small change in the old wallet,—old store debts paid up and receipted, and the cash system triumphant. . . Our future is full of hope and rich with promise. The good time we have said has already come . . ." —Annual Address before the Rock County Agric. Soc. and Mechanics' Institute, Janesville, September 27, 1855, by Colonel Z. P. Burdick, in *Trans. of State Agric. Soc.*, 1854, '55, '56, '57, pp. 151-60.

made. The construction of railroads went on with new activity, and farmers vied with the residents of villages, towns and cities in lending their financial aid. In 1851 the Milwaukee and Waukesha railroad was finished to Eagle Center. In 1852 it was extended to Milton Junction and Janesville. The next year it reached Stoughton and on May 24, 1854, was opened to Madison. The Chicago and Galena Union reached Beloit in 1853. In 1854 the Rock River Valley Union railroad was constructed from Fond du Lac to Minnesota Junction. This latter road became the Chicago, St. Paul and Fond du Lac and built a line from Cary, Illinois, to Janesville in 1855, and completed the gap between Janesville and Minnesota Junction in 1859. The Milwaukee and Mississippi (Mil. and Waukesha) completed its southern branch to Monroe in 1857 and reached the Mississippi River at Prairie du Chien in the same year. The Racine, Janesville and Mississippi railroad completed a road in 1855 and 1856 from Racine to Beloit.

Meanwhile there was the greatest activity in railroad construction northwest of Milwaukee. The Milwaukee and Watertown was completed to the latter place in 1855, to Columbus in 1857 and to Sun Prairie in 1859. The Milwaukee and Horicon reached Horicon in 1855 and the northern branch was completed to Berlin in 1857. The southern branch under the name of the La Crosse and Milwaukee was opened to within a short distance of Portage in 1856, reached New Lisbon in 1857 and La Crosse the next year. There were besides some other less important lines. Such was the rapidity with which railroads were built that the secretary of the Milwaukee Chamber of Commerce could claim by 1858 that within the past two years that city had become one of the principal railway centers in the West.[10]

Already in 1853 immigration had greatly increased. The total number of immigrants in that year was estimated at from 15,000 to 30,000, which exceeded that of the three years immediately preceding.[11] In 1854, 15,000 Norwegians and Swedes came to

[10] Report, 1858.

[11] Report of the Emigration [sic] Commissioner for 1853. Perhaps much of this increase was due to the establishment of the Board. According to other estimates the number was from 40,000 to 80,000. See Report of Travelling Emigrant Agent for 1853.

Wisconsin.[12] During three months of the early fall of 1855 more than 10,000 persons with their teams, stock, etc., were said to have crossed the Wisconsin River near Portage in search of lands.[13] In 1856 over 10,000 immigrants arrived in New York alone on their way to settle in Wisconsin,[14] while in 1857 over 1,000 Norwegians arrived during the month of May and 20,000 more were expected from the same country during that year. The German and Irish immigration was also in excess of former years.[15] There was also much moving of the population already settled in Wisconsin. As the price of land rose many took advantage of the opportunity to sell out at a profit and went farther on to the frontier to take up new farms.[16] There was an exodus of the early Norwegian settlers from Dane county and their places were filled by "enterprising eastern people generally more wealthy than those who have gone to make room for them."[17] This occurred at the very time when the prairie tract in the northern part of the county was being rapidly settled.

The rush for land was unparalleled. At the La Crosse land agency[18] the entries were not numerous until the latter part of 1853. In 1854, however, the entries increased so as to become epidemic. From 1853 to June, 1856, the total warrant and other entries in this section amounted to 2,500,614 acres, involving an outlay of $3,098,317, exclusive of preemptions.[19] The rush for land at the opening of the land office at Stevens Point in 1852 was "unprecedented."[20] By 1856 almost one-half of the land in the district had been sold. From July 5, 1853, to March 31, 1857, sales at this office aggregated 1,435,560 acres. Not one-twentieth of this was entered for lumbering, but by 1857 two-thirds of it was occupied by settlers who were opening farms.[21]

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[12] Tuttle, *History of Wisconsin*, 1875, p. 297.
[13] *History of Columbia County* (West. Hist. Co., 1880), p. 590.
[14] Ritchie, *Wisconsin and Its Resources*, 1857, p. 26.
[15] *Ibid.*, 173.
[16] See *Report* of the Register at the State Land Office at Oshkosh for 1852.
[17] *Madison Argus and Democrat*, June 24, 1854.
[18] Opened June 1, 1853. Carr, *Sketch of La Crosse*, 1854, p. 16.
[19] *History of La Crosse County* (West. Hist. Co., 1881), 403-4.
[20] Billis, *History of Portage County*, 1876, p. 10.
[21] *Governor's Message and Accompanying Documents*, 1857, 2: 436, 446.

Additional land offices were opened in 1857 at Hudson and at Superior.[22] As the unoccupied lands in the older parts of the country were first taken up, later immigrants passed into the valleys of the Fox and Wisconsin rivers on the east and spread up along the Mississippi river on the west.[23] Besides the federal land which was for sale at a minimum of $2.50 within six miles of railroads and at a minimum of $1.25 per acre for all other lands, there were put on sale the school lands of the state, the swamp lands and the various lands granted to the state on behalf of certain internal improvements, notably those granted for the improvement of the Fox and Wisconsin rivers.[24] These latter lands were to be sold at not less than $2.50 per acre;[25] a large part was actually disposed of at that figure in return for labor. Much of this land was located in the neighborhood of the rivers for whose improvement they were granted and their occupation was hastened by the construction of railroads in that vicinity.[26] The population of the congressional district in which these lands were chiefly located was said to have increased from 116,000 in 1850 to 300,000 in 1856.[27] Even the pine lands responded to the upward movement in prices. At a public sale of those lands, at Menasha in 1855, several tracts were sold as high as $24.25 per acre, while the average price was $8.00 per acre.[28] According to Ritchie,[29] the amount of land in cultivation within the state in 1857 was double that of 1850, while he as-

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[22] Ritchie, *Wis. and Its Resources*, 167.

[23] *Ibid.*, 26.

[24] See Hibbard, *Hist. of Agric. in Dane Co.*, 91-104.

[25] See Tuttle, *Hist. of Wis.*, 1875, p. 274. Also see Special Message of Governor Farwell on Fox and Wisconsin Improvement, Feb. 9, 1853. Also message of Governor Barstow in 1855 in reference to the sale of school, swamp and overflowed lands.

[26] See *Report* of Directors of Fox and Wisconsin Improvement Co., 1859. For Sketch of Fox and Wisconsin River Improvement see *Wis. His. Soc. Col.*, **11**: 409-15; *ibid., Proceedings*, 1899, pp. 186-94; also *History of Columbia County*, pp. 448-53, (West. Hist. Co.,) 1880; also *Wisconsin Legislative Manual* for 1870; also *Report of Committee on Naval Affairs*, H. of R. No. 55, 37th Congress, 3d session, 1863.

[27] *Rep. of Directors of Fox and Wis. Imp. Co.*, 1859.

[28] *Menasha Advocate*, quoted in *Wis. Farmer* **7**: 346.

[29] *Resources of Wisconsin*, pp. 47, 111. The statement as to the increase in the population of Dane county is probably an exaggeration. The estimates as to the increase of improved land are within the truth.

serted that but one-sixth of the land in Dane county was yet settled, notwithstanding the fact that the population of that county had trebled since 1850. The population of Fond du Lac county doubled between 1850 and 1854.[30] Milwaukee increased in population from 20,000 in 1850 to 32,000 in 1855 and to 46,000 in 1860. Madison increased in population from 5,126 to 8,664 durin the year 1854–1855;[31] Janesville from 5,000 in 1853 to 10,000 in 1857, and La Crosse from 300 in 1853 to 12,000 in 1857.

During the decade 1840 to 1850 the increase in population in the whole state had amounted to 274,446, or 886.9 per cent. During the following decade, the numerical increase was the greatest in the entire history of the state, being 470,490 souls, an increase of 154.1 per cent. The increase in improved land for the decade 1850 to 1860 was, however, even greater, amounting to 258.3 per cent. Comparison of the increase of population and the increase in improved land reveals the extensive character of the settlement during the decade.[32]

The effect of this large immigration and increase of population upon the prosperity of the state was at first very great, and added its influence to the other favorable circumstances.[33] The result was that in addition to the legitimate increase in the value of land there was an added increment that represented mere speculative value.[34] Men bought land to merely sell again at an advance. Sales as well as entries were enormous.[35]. Towns

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[30] Mitchel, Martin, *Hist. of Fond du Lac County*, 1854, p. 24. Probably an exaggeration.

[31] *Hist. of Dane County*, (West. Hist. Co., 1880), 728.

[32] *Seventh and Eighth Census.* Comparison of the charts representing the movement of the wheat area from 1849 to 1859 with the tables in the *Statistical Atlas of the Twelfth Census,* showing the density of population in Wisconsin at those periods, reveals to what an extent this spread of population was a function of wheat growing.

[33] See *Report of Emigration Commissioner* for 1853.

[34] During the latter part of 1857, after the panic, the editor of the *Wis. Farmer* (9: 411–12) in speaking of the probability of falling prices for labor, farm stock, manufactures and merchandise, expressed the conviction that the price of lands would follow suit, "especially speculative, unproductive lands," which included about three-fourths of all the lands in the state.

[35] See Hibbard, p. 195 for table of land sales in Dane county. The sales for 1855 are seen to have been more than twice as great as for any other year for which figures are given. The average price, $9.68 per acre, is really quite high when it is remembered that there was much land just being taken up at that time in the county, and that in order to attain so high an average con-

were laid out on paper and boomed and men sat down to wait until the sale of town lots at an increased price should bring them a fortune.

All of this activity spelled ultimately "wheat." Man and nature seemed to combine for a few years to make wheat growing attractive to the Wisconsin farmer. More than three-fourths of the tonnage and revenue derived by the railroads for export traffic was due to the carriage of wheat.[36] In return for the golden stream of wheat was received a golden stream of money.[37] Those who had settled down permanently on their land devoted it largely to wheat because it was profitable.[38] Those who were merely holding for a rise sowed to wheat for the same reason and further because cropping to wheat involved no outlay of capital for permanent improvements. "Abundant crops and unexampled prices" is the way in which the year 1855 was characterized in the *Transactions of the State Agricultural Society*.[39] Examples of unusual yields of wheat were given[40] and the Report, in general, reflects the reaction in favor of raising wheat, but little being said of the "necessity of crop rotation."

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siderable land must have been sold at much higher figures. See *ibid.*, p. 196. Gregory states that secondhand land could be obtained at prices varying from $3 to $30 per acre, according to improvements made and the distance from market. These prices did not apply to the immediate vicinity of cities.—*Industrial Resources of Wisconsin*, 1853, p. 310.

[36] See below pp. 156–7.

[37] The crop of 1855 was estimated in the *Wis. Farmer* at 12,000,000 bushels, of which 8,000,000 bushels would probably go to foreign buyers for $10,000,000. Improved farm machinery had made this possible. 8: 43.

[38] "Prices for the years preceding the current one (1855) ending Aug. 31."

Year	Wheat	Flour
1848	$0.83	$4.50
1849	.80	4.25
1850	.88	4.75
1851	.70	3.35
1852	.60	3.1
1853	.70	4.0
1854	1.30	6.7

"Prices must drop from 20 per cent to 30 per cent within 60 days. . . . Farmers may prepare to sell the new crop at $1.00 to $1.25. They cannot be in better business in this state certainly than raising wheat at those prices."—*Wis. Farmer*, 7: 234–235. This amounted to a warning with a string attached.

"Two good seasons have made Wisconsin smile like a young Eden."—*Prairie Farmer*, 14: 133.

[39] Report for 1854, '55, '56, '57, p. 118.

[40] One man in Dane county harvested 45 bushels per acre on two acres. *Ibid.*, 114.

An increased acreage was sown to wheat in 1856 so that in spite of drouth which poor preparation and cultivation of the soil made the more disastrous, the largest crop in the history of the state up to that time was raised.[41] The wheat produced within the counties drained by the Milwaukee and Mississippi railroad exceeded in 1856 the amount produced in 1855 by 50 per cent.[42] The price of wheat showed a downward tendency, falling as low as 80 cents at the close of navigation in 1856.[43] Nevertheless an increased acreage was again sowed, though at a greatly increased cost,[44] and, the season proving favorable, a large crop resulted.[45] An attempt to market the surplus in the fall of 1857 under the circumstances of the panic then in full sway resulted in a great drop in the price, wheat selling in Milwaukee at the beginning of 1858 at 55 to 60 cents per bushel.[46] Shipments were then held back in the hope of better prices, but the farmers of Wisconsin, on account of their previous speculative operations and on account of general conditions, were not in a situation to hold their wheat from market any considerable length of time, and the price recovering somewhat as it became evident that the crop of 1858 would not be an average one,[47]

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[41] "The staple of Wisconsin is wheat. . So high has Wisconsin spring wheat stood at the eastern and European markets that our merchants have been able to sell for 8 or 10 cents above the prices for Illinois and more southern states. This fact turned the attention of our farmers to raising it to the exclusion of other grains; and while our crop of wheat since 1850 has increased at the ratio of 50 per cent per annum, the crops of rye, oats, barley and corn have remained stationary or advanced only with the home demand." *Rep. of Milwaukee Board of Trade* for 1856, p. 12. (Rather an extreme statement as to wheat if taken literally.)

[42] Report for 1856. It is impossible to secure full and reliable statistics of the production of wheat in Wisconsin during the decade 1850-1860. No provision was made by the state before 1857 to secure such data. The returns secured for that year and for the year previous were very partial and incomplete (See Rep. of Secretary of State, 1857, pp. 93-94). For the year 1858 the returns are more complete. It may be said that the statistics gathered by the state in reference to farm crops are in general untrustworthy, even up to the present time.

[43] *Rep. of Milwaukee Board of Trade* for 1856, *supra.*

[44] *Ibid.*, for 1858.

[45] *Ibid.*, estimated at 14,000,000 bushels by *Wis. Farmer*, 10: 51.

[46] See Table VIII.

[47] "The wheat crop of 1858 is generally considered one-third less than 1857." —*Rep. of Milwaukee Chamber of Commerce* for 1858. See also *Wis. Farmer*, 1858, p. 332.

receipts poured in again and kept the price at a low point. Receipts at Milwaukee for 1858 amounted to nearly five million bushels, and those of the other lake ports were above a million bushels.[48] Notwithstanding the short crop of 1858 and the low price, there seemed nothing else to do but to raise wheat and a further increased acreage resulted.[49] If farmers were hard pressed financially, that was a good reason for not going into something which required a greater outlay of capital than raising wheat.[50] If the price of wheat was low, there remained the memory of the high prices and good times of a short time before, and hope bade them believe that the same prosperity might come again. They were not without warning, however. Low prices and short crops had again stirred up the feeling that it was unwise to depend so exclusively on wheat. "Facts should admonish farmers not to rely too implicitly upon the wheat crop."[51] Again, "Our farmers would be wise to so diversify their operations as not to run entirely into one thing and that wheat."[52] In regard to an exhortation to farmers to grow more wool, the *Wisconsin Farmer* continued, "So may it yet be, ere our lands are exhausted with eternal wheat growing and farmers discouraged because they cannot get rich merely doing one and that too often a foolish thing."[53] The reports of the Agricultural Society, too, assume a slightly more doubtful tone and in the report for 1856 there was complaint of methods of

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[48] *Rep. of Chamber of Com.* for 1858.

[49] "While speculative property has been greatly reduced in value, the productive industry of the state of Wisconsin has greatly increased. Many have left cities and villages and instead of depending upon the rise in value of town lots have turned their attention to agricultural pursuits and the number of acres sown to wheat much exceeds that of former years."—*Report of Directors of Fox and Wisconsin Improvement Co.*, 1859.

[50] Wool growing was declining during this time, caused, according to some, by destruction by dogs. (*Wis. Farmer*, **10**: 362.) This merely meant that there were more people interested in dogs than in sheep.

[51] *Wis. Farmer*, **10**: 475.

[52] *Ibid.*, **11**: 71.

[53] *Ibid.*, 396. "Less land and better culture." . . "It must cease to be the policy of our farmers to grasp all the land they can pay and run into debt for, scrape it over until they have exhausted it of its fertility, etc." —*Ibid.*, 111.—"How many intend to grow nothing but wheat?"

"We are anxious to know whether the wheat mania has subsided, or whether the recent fair prices have not had the effect to seriously aggravate the disease." —*Ibid.*, 115.

cultivation.[54] The crop of 1859 was also not up to the standard of the crop of 1857,[55] but the increased acreage resulted in an increased total yield for the state.[56]

But little is heard of other crops. They continued to be grown by a few, but there was little further tendency toward making them relatively more important. The potato crop was said to be growing to be one of precarious cultivation on account of the rot. Reports on attempts at raising flax were not very encouraging. There was complaint of lack of barns for dairying and also of a lack of green feed.[57] Of course all this spells indifference to other crops.

During the decade 1849 to 1859 the wheat crop of the United States as a whole increased from 100,485,944 bushels to 173,104,924 bushels.[58] During the same time, the crop of Wisconsin increased from 4,286,131 bushels to 15,657,458 bushels, or an increase of 11,371,327 bushels. The increase in Wisconsin was thus 15. 6 per cent. of the total increase for the United States as a whole.[59]

A comparison of the charts[60] representing the wheat areas for 1849 and 1859 reveals the great development during the decade. Whereas in 1849 but a trifling amount of wheat had been raised north of the Wisconsin river, by 1859 a number of the counties in the western part of the state had sprung into importance. There had likewise been greatly increased importance in wheat growing in every other part of the state except in the extreme southeastern portion. This increase was particularly marked in the south central part of the state. Rock county which ranked first in importance in 1849 showed, apparently, a remarkable

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[54] *Trans. of State Agric. Soc.*, 1854, '55, '56, '57, p. 257; also p. 486. Also *ibid.*, 1858–59, p. 74.

[55] This must be kept in mind when using the year 1859 as a standard.

[56] The yield given in the census of 1860 for the year 1859 was 15,657,458 bushels.

[57] *Trans. of State Agric. Soc.*, 1851, p. 197; 1853, pp. 51–3, 238, 255 ff; 1870, pp. 28–9.

[58] See Table VI.

[59] If we calculate to 1860 when Wisconsin produced perhaps the most remarkable crop of wheat ever produced in the state, the proportion of the total increase to be attributed to Wisconsin is over 30 per cent. The crop of 1860 was, however, exceptional.

[60] See Figures 1 and 2.

stability during the decade since in 1859 both the yield per capita,[61] the yield per square mile of improved land[62] and consequently, the index of importance or degree of specialization[63] remained almost exactly the same as in 1849. In live stock and in the production of hay the same stability obtained, and almost the same stability in reference to "other crops."[64] It appears that the influences favoring wheat growing in this county during the decade were on the whole just about counteracted by the operation of opposing influences so as to leave conditions about unchanged. It is clear, however, from what we have already seen that there had been a great tendency toward wheat growing in Rock county about the middle of the decade,[65] followed by a decline in the latter part of the decade, and that stability was the net result. Relatively, however, Rock county as well as

[61] See Table I, showing the per capita yield of the different counties at the different census periods.

[62] See Table II, showing the yield per square mile of improved land for each county at the different census periods.

[63] See Table III, indicating the degree of specialization or importance of each county in wheat at the different census periods. This index of importance is obtained by extracting the square root of the product obained by multiplying the number representing the yield of wheat per capita in each county by the number representing the yield of wheat per square mile of improved land in the same county. In this way importance is given to both yield per capita and yield per square mile of improved land in estimating the actual importance of any county in the production of wheat. (See *Ninth Census of the United States.* 3: 367-68.) If dependence were placed upon the per capita yield alone, the existence of a large city within a county would for example unduly depress the importance of that county. This can be corrected in part by making the yield as estimated according to the amount of improved land in the county a factor in the result. On the other hand the yield per capita exercises a modifying influence on the yield per square mile of improved land. The yield per square mile of improved land rather than the yield per square mile of total area is chosen as a factor in the result, as being more significant and more accurate.

The yield per square mile of improved land is not worked out for crops other than wheat; but when it is necessary to take both factors into consideration in respect to other crops it should be noticed that a proportional relation exists between the yield of wheat per capita and the yield of wheat per square mile of improved land on the one hand and the yield of any other crop per capita and the yield of that crop per square mile of improved land on the other hand. That is, for any county the yield of wheat per capita is to the yield of wheat per square mile of improved land as the yield per capita in any other particular crop is to the yield per square mile in that crop. Three terms of the proportion are thus given and the fourth term, *i. e.*, the yield per square mile for any other particular crop, can easily be found.

[64] See Tables XI-XXI.

[65] See above pp. 40-1, note 9.

Walworth and Kenosha counties, had declined in rank. Rock declined from first to fifth place, Walworth from second to eighth place and Kenosha from third to seventeenth place. Racine county had declined from tenth place to thirty-second place. All of these counties, except Rock, show absolute decline, also, in the importance of the wheat crop. This decline was largely in yield per square mile of improved land and indicates in part that improved land had increased faster than population.[66] There was slight change in these counties also in respect to other crops. The tables for live stock,[67] however, show an important increase in that industry.[68] Kenosha showed a notable increase in the number of milch cows, an indication of the early movement toward dairying in that county. In these three counties, therefore, stock raising was increasing at the expense of other branches of agriculture, especially at the expense of wheat growing.

Marquette county showed an apparent decrease but this was due to the setting off of Green Lake county from that county during the decade, the effect of which was to deprive the former county of that part of the original county which was most important in wheat growing.[69] Green Lake county stood first in 1859 among

[66] This may be stated in another way by saying that improved harvesting machinery enabled a larger acreage to be sown to wheat per capita and therefore a larger per capita yield to be secured than would have otherwise been the case.

[67] See Tables XVII-XXI.

[68] The increase in total live stock appears larger than is really the case since the figures falling below a certain standard are omitted entirely and thus more were omitted in 1849 than in 1859.

[69] Chippewa presents a similar case, having lost to several counties newly formed. The parcelling out of this county during the following decades as well, makes comparisons for it at the various census periods difficult. Brown and Washington present somewhat similar cases. The statistics for Adams and Sauk counties are combined for 1849, though apparently representing Adams county alone. This fact makes comparisons difficult in those two counties for the census years 1849 and 1859. The various counties in the northern half of Wisconsin have since 1850 undergone numerous changes in reference to their respective boundaries. This makes comparisons between those counties difficult. Close study of these changes, however, proves that they constitute a disturbing element to a very much less exent than at first appears. The method of estimating by yield per capita and per square mile of improved land rather than by total acreage or by total yield avoids the essential difficulties of the situation. It will be found, too, that the changes pertain almost entirely to those counties which have been relatively unimportant in the growing of wheat.

the counties that had increased in importance in the growing of wheat. Marked increase was also shown by that county over Marquette county in 1849 in respect to other crops and in respect to live stock. It would thus appear that this county, notwithstanding the high yield in respect to wheat, was not so specialized in the culture of that crop as might at first appear, but was rather an extremely productive county in which there appeared at an early date very considerable diversity in agriculture.[70]

Dane, Columbia, and Dodge counties, which are next in order of importance, may be grouped together. The tendency toward wheat was marked in each of these three counties. The first and last doubled and Columbia more than doubled, the amount of wheat produced per capita in 1859 as compared with 1849, while all three counties also increased greatly in yield per square mile of improved land.[71] This was especially marked in Dodge county. Dane and Columbia counties increased considerably in the production of corn and oats,[72] while Dodge showed little increase in that respect. Columbia showed a small increase in the number of milch cows per capita and a moderate increase in the number of "other cattle" per capita. Further than a marked decline in the number of swine per capita in all three counties, there was no noteworthy change. On the whole, we must conclude that the tendency toward wheat had been overwhelming during the decade and that the small increase in other crops and other pursuits was incidental and probably confined in a large measure to those older areas which in 1849 had already reached the point of exhaustion in wheat growing.

The northeastern group of counties showed a very considerable increase, in general, in the importance of the wheat crop. This was especially true in respect to Fond du Lac[73] and Kewaunee

[70] Reference to the figures for this county during the following decades serves to strengthen this presumption.

[71] Probably due in part to greater fertility of the new land which had been brought into cultivation and in part to improved harvesting machinery.

[72] These crops were apparently either grown for the market or as incidental to wheat growing. Note the decline in the number of swine.

[73] Fond du Lac county is comparable in many ways with Dane, Dodge, Columbia, and Green Lake counties.

counties. The latter county produced a considerable yield of rye and potatoes as well. Stock growing was unimportant. Fond du Lac county raised considerable oats, and had increased moderately in number of sheep, and in number of "other cattle."[74] In the remaining counties of this section the tendency toward wheat was more moderate. Rye, to a considerable extent, and barley, to a less extent, were competing crops. Stock growing was unimportant. This section represents, in general, the influence of the forests in retarding the tendency toward wheat.

Jefferson and Waukesha must be discussed separately. The former county doubled its population and more than quadrupled the amount of improved land during the decade. There was, however, considerable apparent loss of importance in wheat growing, and only a small per capita increase in other crops combined. It is thus evident that the loss was not due to farming to other crops. Neither does reference to the table for live stock show importance in that respect, though there was some increase in sheep and in "other cattle." The explanation probably lies in the great increase in "improved land," much of which was likely improved only in name. This seems the more probable because, while there was a large decline in the yield of wheat per square mile of improved land, there was a small increase in the yield per capita.[75] In Waukesha county there was considerable increase in importance in wheat growing, together with a noticeable increase in the number of sheep and a moderate increase in the number of milch cows. Both Jefferson and Waukesha counties are unlike the south central counties in that they never went to such extremes in wheat growing, and unlike the other southeastern counties, in that wheat continued to increase in importance for a time. In Waukesha county, the railroads probably had little influence upon conditions in agriculture on account of the fact that it had always had a market close at hand in Milwaukee. Milwaukee county presents a similar case.

[74] Increase per capita is always meant, not absolute increase.

[75] It is possible that the wheat crop in Jefferson county in 1859 suffered more from the drought than neighboring counties.

Though raising twice as many bushels of wheat in 1859 as in 1849, the relative importance of the crop remained unchanged.[76]

The southwestern group of counties showed a marked increase in the importance of the wheat crop,[77] except in the case of Green county where the increase was only moderate. The absolute importance of wheat was less, however, than in the south-central group of counties. This is explained by the much greater importance of corn and oats in the southwestern counties. Reference to the tables for live stock shows why Green county failed to make such a large increase in wheat as the other counties. Stock growing had obtained a much better start there, while the character of the country is such as to especially encourage that industry. A very considerable increase in the number of milch cows indicated the coming importance of dairying. The most striking increase, however, was in the number of "other cattle," in which the other counties of the group shared. Horses also increased considerably. In the face of a general decline in the number of swine in the state as a whole, that branch of animal husbandry held its own in this section during the decade. The importance of the corn crop of course constitutes the explanation.

Buffalo, St. Croix, Pierce, La Crosse, Trempealeau, Vernon, Crawford, Pepin, and Polk form a group of counties along the Mississippi river. The first five attract attention at once by their comparatively high rank, and all of them by the fact that not one of them was important in wheat growing in 1849. All were unimportant in stock raising except for a considerable number of swine.[78] Although these counties were less important in the culture of wheat than the south-central group of counties, they produced about the same amount per capita of other crops. In this respect they are analagous to the southwestern group. Corn, oats and potatoes were the other crops raised besides wheat.

[76] The city of Milwaukee constitutes a disturbing element in Milwaukee county, throughout the entire period.

[77] Iowa and Lafayette quadrupled the per capita yield of wheat during the decade. Grant a little less than trebled the per capita yield during the same time. In general, the per capita yield of the other crops combined just about doubled. These counties were very little developed in 1849.

[78] Amounting to 1.1 per capita in Buffalo county, if the census figures can be trusted. Trempealeau also showed a considerable number of "other cattle."

These counties represent a case where there had not been an outlet to a market for a sufficient length of time to enable wheat growing to take hold.[79]

The remaining important counties lie in the central portion of the state and may be treated together. Eau Claire, the most important, ranks nineteenth in importance. Only Richland and Adams were of any importance in wheat growing in 1849, and these in but a small way. In general, it may be said that these interior counties represented the tendency toward wheat as modified by forest conditions and in part by lack of transportation facilities. The importance of wheat was relatively low in comparison with other crops,[80] the apparently rapid tendency toward wheat in some cases being due, as in Richland, to the very small absolute importance of that crop in 1849. Sauk county, so far as comparison is possible, shows similarity, as might be expected, to the other interior counties and to Green Lake, Dane, Columbia, and Dodge counties. Within this entire region stock raising was almost altogether lacking.

The increase in the per capita yield for the state as a whole was from 14.03 to 20.18 bushels, and the increase per square mile of improved land was from 2,624 to 2,675 bushels. The small increase in the yield per square mile of improved land means a low yield per acre and points in connection with the increased yield per capita, to heightened extensivity in the methods of cultivation. That the per capita yield of other crops combined increased less rapidly than wheat, although corn, oats and potatoes usually yield a higher number of bushels per acre than wheat, proves that the acreage did not increase in respect to these other crops at the expense of wheat.[81] The small increase in the amount of hay[82] produced together with the very

[79] Buffalo county had just begun to export wheat a short time before. Kessinger, *Hist. of Buffalo County*, 1887, p. 368 ff.

Polk and Pepin were comparatively unimportant as yet. It will be remembered that La Crosse had been reached by rail only in 1858, and Prairie du Chien in 1857.

[80] It must not be forgotten that wheat was nevertheless by far the most important single crop.

[81] The per capita yield of wheat increased 43.8 per cent. while the per capita yield of other crops combined increased but 32.6 per cent.

[82] The increase was from .90 tons per capita in 1849 to 1.10 tons per capita in 1859.

slight increase in the total number of live stock per capita[83] proves that a relatively small amount of the improved land was turned into meadows and pastures. Consequently it must have been devoted largely to wheat; and cheap land, dear labor and the utilization of improved harvesting machinery made it most profitable to cultivate a large acreage at a comparatively low yield per acre.

In some of the southeastern counties there was a tendency toward stock raising and away from wheat, but in the state as a whole there was an increased tendency to specialize in wheat. This tendency is probably concealed in part by the fact that the wheat crop for the census year was a little below an average crop.[84]

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[83] The increase for the decade was from 1.46 to 1.50 per capita, chiefly milch cows, "other cattle" and horses.

[84] See above p. 49. If we calculate the per capita yield for some of the more important counties for the crop of 1860, estimating the increase in the population to have been one-tenth of the total increase for the decade, and compare the figures with those for 1859, we get the following results:

Counties	1859	1860
Columbia	42.3	56.1
Dane	40.0	67.0
Dodge	34.1	53.1
Fond du Lac	36.1	50.2
Green	26.8	31.1
Green Lake	43.6	67.3
Jefferson	13.7	29.2
Kenosha	25.3	41.8
Lafayette	22.5	33.8
Marquette	5.2	21.3
Racine	14.5	43.5
Rock	37.9	59.2
Sauk	19.1	39.6
Walworth	30.5	63.5
Waukesha	21.7	46.3
Winnebago	18.9	32.1

CHAPTER II

THE DECADE 1860 to 1870

In the first year of this decade one of the largest, if not the largest, wheat crop in the history of the state was raised.[1] It was one of those years when every condition was favorable. The crops of 1856, 1858, and 1859 had in consequence of unfavorable seasons not been good. The net result was that available fertility had increased faster than it had been removed. Under the favorable conditions of 1860 the soil brought forth most bounteously.[2]

The price of wheat was moderately high in 1860 but broke so soon as the heavy crop of that year began to be put on the market.[3] Inadequate facilities for transportation resulted in the western markets being clogged with wheat. In December, 1860, the price of wheat in Milwaukee went as low as 63 and 65 cents.[4] These prices were far from remunerative[5] and robbed the farmers of their anticipated large income from the crop.

The crop of 1861 was not so large as that of 1860, but the acreage was said to have been little, if any, short.[6] The price con-

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[1] See above, p. 56, note 84; see also Table IV.

[2] "The year 1860 was a golden year in the history of Wisconsin, with a yield of over 27,000,000 bushels of wheat." *Trans. of State Agric. Soc.*, 1861-68, p. 23 ff. See *ibid.*, 1860, p. 45. "The wheat crop in Sauk county is estimated at 24 bushels per acre, and the acreage at 50 per cent. more than last year. Shou'd present prices continue, this year's wheat crop will put most of the farmers firmly on their feet, free them from debt and render them independent." The average the year before had been 12 bushels per acre in Sauk county. *Wis. Farmer*, **12**: 297; **13**: 33-5. See *ibid.*, pp. 254, 290, 295, 314, for unusual yields of wheat. See also *ibid.* **14**: 1.

[3] See Table VIII.

[4] *Rep. of Milwaukee Chamber of Com.* for 1860, p. 21.

[5] *Trans. of State Agric. Soc.*, 1861-68, p. 84. See, however, note 2 above. Enough of the crop of 1860 must have been sold at a price sufficiently remunerative to induce further sowing to wheat.

[6] The estimate in *Rep. of Milwaukee Chamber of Com.* was 15,000,000 bushels.

tinued low but in spite of this there were 1,221,517 acres sown to wheat in 1862.[7] Low prices and poor crops again brought out strictures on the exclusive reliance upon wheat: "The wheat crop, unfortunately the sole reliance of a large proportion of our farmers, has been in some parts a serious failure owing to bad management, unfavorableness of weather and deficiency of working force. In addition to the low price for grain, the farmer suffered from the high cost of what he had to buy."[8] Two remedies were suggested: first, increased facilities of transportation from the lake eastward, and, second, certain material modifications of agricultural practice. Complaint was also made of the "large and unlimited proportion of the market-price of grain, charged for carrying it from the interior of the state to the lake shore" and the regulation of railroads was advocated.[9]

In 1863 there came a good crop and higher prices once more. The next year, however, on account of the drouth and the chinch bugs, the wheat crop was unusually deficient. The chinch bugs had been accumulating for several years, though their ravages had not heretofore been serious. The methods of cultivation followed by the farmers of Wisconsin encouraged the multiplication of the insects. Now they made almost a clean sweep in some parts of the state, and continued their depredations for a year or two, though to a diminished extent.[10] The wheat crop of 1865 was a good average crop and of good quality and war prices ruled. The acreage had declined[11] after 1864 but in response

[7] *Rep. of U. S. Dept. of Agric.*, which in 1862 for the first time undertook the gathering of statistics each year in reference to farm crops.

[8] *Trans. of State Agric. Soc.*, 1861-68, pp. 99-100.

[9] *Ibid.*—"Wheat growing doesn't pay. The experience of the past two years has probably brought over many converts to the doctrine that wheat growing is not to be relied upon exclusively as a source of prosperity among farmers. Still there are many who cling to it as the safest way to gain a livelihood, and are at the same time on the brink of poverty from this very cause; this is but a legitimate result, etc." Then follows a plea for diversified farming. *Wis. Farmer*, **15**: 172. *Ibid.*, **14**: 61, 74, 282-83.

[10] See Hibbard, *Hist. of Agric. in Dane Co.*, p. 131. See *Bulletin of the U. S. Dept. of Agric., Divis. of Entomol.* No. 15, for history of the ravages of the chinch bug. See also *Second An. Rep.* of State Entomologist of Illinois, 143-144. Also *Report* of U. S. Commissioner of Agric., 1887, p. 56 for later ravages in Wisconsin. See *Trans. of State Agric. Soc.*, 1876-77, p. 140 ff; *Ibid.*, 1861-68, p. 33. See *Wis. Farmer*, **17**: 7.

[11] *Report of the U. S. Dept. of Agric.* for 1865, pp. 54, 59, 61. See Table IV.

to high prices, the loss was largely recovered in 1866, and, as the price of wheat continued to mount upward in 1867, there was a large increase in acreage in that year. After the decline in prices again in 1868, there was a corresponding decline in acreage. The crop of 1866 when almost ready to harvest suffered great loss from heavy rains,[12] though the total yield equalled the yield of 1865 on account of the increased acreage. The crops of 1867 and 1868 seem to have been medium to average crops, though the total yield was not what might have been expected from the large acreage. The quality of Wisconsin wheat had been deteriorating for several years,[13] however, and after about 1868, quotations for No. 1 spring wheat disappear from the Milwaukee market. The farmer thus suffered another diminution of his profits on account of the lowering grade of his grain. The wheat crop in Wisconsin in 1869 was, like that of the remainder of the country, somewhat above the average. But falling prices again intervened to keep the wheat grower from reaping the rewards of a bounteous yield. There was a similar decline in the price of other grains which prevented turning to other crops. Facilities for transportation were inadequate, and freight rates remained high,[14] though the movement toward lower prices was general as the premium on gold diminished. The farmers of Wisconsin participated in the general distress, and the situation there was aggravated by the failure of the hop crop and by the ruin consequent to the break-down of that industry.

The wheat farmer of Wisconsin was indeed in a bad way. He had staked his last dollar and his last acre on wheat. In this game of chance, good crops and high prices alternated with poor crops and low prices in such a way as to induce him to keep in the game and pay his forfeits in the hope of winning once again. Habit, too, kept him from turning to other means of livelihood. It was another such game of chance that attracted the attention

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[12] One-third to one-half of the crop was destroyed according to the estimate of the Milwaukee Chamber of Commerce, but this appears to be an extravagant assertion.

[13] *Rep. of Milwaukee Chamber of Com.* for 1868, p. 19.

[14] See Chapter on Relations between the Wheat Farmer and the Common Carrier.

of the farmer for a brief period. As a result of a combination of circumstances including the ravages of the chinch bug, failure in the wheat crop and particularly the rise in the price of hops, the first real episode in the wheat period took its start.[15] The cultivation of hops, which had been persisting in a small way for some years, now took a sudden bound and spread over portions of the state with great rapidity. In 1864, 358,583 pounds were produced, almost exclusively in Sauk county. In the following year the crop amounted to 829,377 pounds, Sauk again producing 63 per cent. of the entire crop.[16] Under the stimulus of high price the industry continued to spread and increase up until 1868. In that year Sauk county had one acre of improved land out of every seven and one-half acres in hops. For a time the crop was an exceedingly profitable one though expenses of production were high. But it came the losing turn again. During 1868 the price of hops dropped as low as it had been high before and many of the participants, having lost all their winnings and having no capital to start in a new business, went back to the game of wheat again. Wheat quickly recovered its supremacy, which had indeed hardly been threatened considering the state as a whole. There was less disposition than ever to make new ventures and it is probable that the hop craze had more effect in discouraging the efforts toward diversification than it had toward substituting some other crop for wheat.[17] The movement toward a better system was painfully slow and aroused far less popular enthusiasm than the agitation against railroads. There was much justice in the movement in favor of lower rates and more effective control of railroads by the state; but it must be acknowledged that for many of the difficulties of the farmer's situation, he was either to blame himself or else the blame attaches to general conditions. To a certain extent then the railroads were made the victim of undeserved hostility.

[15] See Hibbard, 149-54 where so good an account of the hop craze is given for the entire state that it is superfluous to take it up here. See also *Trans. of State Agric. Soc.*, 1861-68, pp. 36-8.

[16] Jefferson county produced 97,772 pounds and Winnebago county, 69,183 pounds. Thirteen counties produced over 4,000 pounds each and eighteen over 1,000 pounds each.—*Rep. Sec. of State* for 1865.

[17] *Trans. of State Agric. Soc.*, 1861-68, pp. 36, 299, 419-20; 1869, pp. 17-18; 1870, p. 28.

On account of the inadequacy and unreliability of the statistics,[18] it is difficult to accurately determine the effect of the Civil War upon the wheat growing industry in Wisconsin. Further difficulty arises in isolating the results due to the war from those due to other causes, such as changes in the price of wheat and the depredations of the chinch bugs. According to the reports of the United States Department of Agriculture, the acreage increased from 1860 to 1863, remained about constant in 1864 and fell off very considerably in 1865 though still remaining at a higher figure in the latter year than in 1860.[19] According to the figures furnished in the reports of the Secretary of State, however, the acreage in 1864 was slightly less than in 1860 while a large decline was reported for 1865.[20]

The decline in acreage in 1865 can, however, be largely accounted for as a result of the ravages of the chinch bug during the preceding year, when the average yield for the whole state was reduced to 8.4 bushels per acre.[21] It is probable, too, that the heavy decline in the price of wheat in the spring of 1865 had considerable effect in diminishing the acreage sowed to that crop in that year.[22] It appears that the effect of the war upon the acreage cropped to wheat was in general manifested in a slower increase of the wheat area than would otherwise have been the case, though even this is doubtful in view of the higher prices and of the introduction of labor-saving machinery due to the war. The prevailing current opinion of the time was also to the effect that the war had little effect in diminishing the area sown to wheat.[23] Up to December 31, 1864, Wisconsin furnished 75,000

[18] See *Trans. of State Agric. Soc.*, 1861-68, pp. 26-30.

[19] See Table IV.

[20] *Ibid.*

[21] See Table V.

[22] See Table VII.

[23] In the *General Report* (1868) accompanying the *Trans. of State Agric. Soc.*, 1861-1868, p. 25, it is said that the women and children, led by the patriots who were either unable or were not needed to wield the weapons of war, had "carried forward the arts of peace with undiminished results;" see also *ibid.*, p. 84 (Report for 1861). See *Ibid.*, 1887, p. 39. See, however, *Ibid.*, 1861-68, p. 100 (Report for 1862) where a serious failure in the wheat crop in some parts of the state was attributed in part to a partial deficiency of the working force by reason of the large numbers of farmers who had enlisted in the ranks of war.

men for the federal service,[24] and by the end of the war this number had increased to 91,379 men or one man for every nine of the inhabitants of the state.[25] The withdrawal of so large a proportion of the working force of the state without serious detriment to industry was due in part to the remoteness of Wisconsin from the scene of conflict, but most of all to the extraordinary introduction of labor-saving machinery in response to the higher prices for wheat and the scarcity of labor. Even by 1860 the use of improved farm machinery had increased greatly and it was estimated in that year that the farmers of the state would expend not less than $2,000,000 in the purchase of implements and machinery alone.[26] Upon the breaking out of the war, however, the movement was greatly accelerated[27] and latent ingenuity was awakened to bring forth numerous inventions, while capital was soon diverted for the manufacture of the improved machinery now made more necessary than ever.[28] In 1862 an "unprecedented quantity of reapers and mowers" were sold within the state,[29] and the movement gathered impetus with the progress of the war. Numberless improvements in implements and machinery were exhibited at the state fair in 1864 and in the following years.[30] Reapers that did satisfactory work were constructed by a man named Warner of Prairie du Sac, and by E. W. Skinner of Madison, and John F. Appleby of Mazomanie was led to turn his attention, while performing the duties of a soldier, to the problem of evolving a self-binding attachment for the harvester, until he finally succeeded in perfecting the famous binding attachment which bears his name.[31] The ingenuity of the mechanic and of the inventor in the north-

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[24] *Quart. Jourl. Econom.*, **20**: 276.

[25] *Wisconsin State Census Report*, 1895. Part III., p. vi.

[26] *Wis. Farmer*, **12**: 293-95. Regret was expressed that fully seven-eighths of this expenditure would be made outside of the state, including from 600 to 1,000 threshing machines at $400 to $475 each from Ohio and New York, and from 5,000 to 10,000 reapers from various points without the state.

[27] *Trans. of State Agric. Soc.*, 1861-68, p. 84 (Rep. for 1861).

[28] See Hibbard, *Hist. of Agric. in Dane Co.*, p. 131 ff. Also *Wis. Farmer*, **13**: 196.

[29] *Wis. Farmer*, **14**: 282-83.

[30] *Trans. of State Agric. Soc.*, 1861-68, pp. 199, 220, 221, 257, 258, 288, 323-24.

[31] Hibbard, *supra*.

ern workshop in the creation of labor-saving machinery for the farm doubtless had as much to do with the successful issue of the war as the valor of the soldier in the northern army.[32] The introduction of improved machinery in the state did not, however, cease with the war. An automatic wire grain binder, perfected by S. D. Carpenter of Madison, received special notice at the exhibition of the State Agricultural Society in 1867, as dispensing with the services of five field hands and having numerous useful attachments.[33] George Esterly, the inventor of the Esterly "header"[34] had directed his ingenuity toward the perfection of the Esterly Seeder and Cultivator, of which he manufactured in 1868 not less than 5,000 valued at $400,000. During the same year, the J. I. Case Company at Racine was marketing threshers, horsepowers, truck wagons, straw stackers and other implements, to the value of $1,000,000 annually in all parts of the United States. Reapers and mowers were extensively manufactured at Beloit, Janesville, Madison, and Whitewater, while various other farm implements were manufactured at the latter place as well as at Berlin and Horicon.[35] The unfortunate aspect of all this activity in the introduction of improved farm machinery was that it stimulated the extensive cultivation of the soil so that efforts for a thorough and systematic management were relaxed and, in many portions of the state, exclusive cropping to wheat with its ruinous results went on more assiduously than ever.[36]

Examination of the chart representing the wheat area in 1869 reveals how the wheat crop continued to envelop the state.[37] Toward the northeast and in the western part of the state, wheat had extended its sway and increased its hold. In the south-central part of the state, too, the close of the decade found

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[32] See *Trans. of State Agric. Soc.*, 1861-68, p. 38; 1887, p. 39. Also article in the *Quart. Jour. Econ.*, **20**: 258-78, on *The agricultural development of the West during the civil war*, by Emerson D. Fite.

[33] *Trans. of State Agric. Soc.*, 1861-68, p. 324.

[34] See above, p. 32, note 73.

[35] *Trans. of State Agric. Soc.*, 1861-68, pp. 53, 54

[36] *Ibid.*, pp. 38-40. See also, Kessinger, L., *Hist. of Buffalo County* (1887) p. 372. See below Part II, Chapter IX, note 12.

[37] See Figure 3.

wheat apparently more completely dominant than in 1859. Only in the southern part of the state had wheat begun to yield its sway.

The river counties, St. Croix, Buffalo, and Trempealeau, now held first, second and third place, respectively, in importance, having displaced the south-central group. The other river counties, Pierce, La Crosse, Vernon, Pepin, and Crawford, had also increased greatly in importance, though still outranked by the south-central counties, and by others of the forested region. St. Croix, Buffalo, Vernon, Pepin and Crawford showed a considerable increase in the per capita yield of "other crops" combined but not comparable to the increase in wheat. Trempealeau, Pierce, and La Crosse on the other hand showed actual losses in the per capita yield of "other crops" taken as a whole. This section illustrates during the decade the extremest tendency toward specialization in wheat in the history of the industry within the state.[37] St. Croix, Buffalo and Trempealeau counties showed a per-capita yield of 74.6, 51.0 and 48.1 bushels respectively. In yield per square mile of improved land, the four river counties, Buffalo, St. Croix, Trempealeau, and Pierce stood at the head with 6,131, 5,072, 4,869 and 4,790 bushels respectively. The yield per square mile in these counties is more significant as there was a considerable population engaged in lumbering, thus adding to the total population without adding to the amount of improved land, and consequently to the amount of wheat raised.

Oats constituted the largest item in "other crops" in this section, but showed important gain only in St. Croix and Buffalo counties. Potatoes showed a marked decline since 1859. On the whole, little tendency toward stock growing was apparent. St. Croix county revealed a most marked absence of live stock, except in reference to horses.[38] All of the counties of this section, except St. Croix and Polk, reflected in a moderate way the general increase in sheep,—Vernon showing a little more and Trem-

[37] See above, p. 56, however, for table of per capita yields in 1860 in Green Lake, Dane, Walworth, and Rock counties. The year 1860, however, represents an unusual yield, rather than extreme specialization.

[38] Significant as reflecting the extreme specialization in the growing of grain, especially of wheat.

pealeau a little less than the average number per capita for the state as a whole. There was a decline in the number of swine, except in Crawford county. Buffalo and Trempealeau counties showed a rather important increase in the number of milch cows. Buffalo, Crawford, Pepin, and Vernon showed some increase in "other cattle," the increase being marked in the case of Buffalo. The dominance of grain farming in this section is reflected in that the number of horses was in general a little above the average for the state.[39]

The south-central group of counties consisting of Dodge, Columbia, Dane, and Green Lake are next in importance. They had increased in absolute importance in wheat growing, but not to such an extent as some counties of the previous group, and had thus been displaced in rank. Dodge, however, retained fourth place. Columbia dropped from third to fifth place, and Dane[40] from second to sixth place. Green Lake had suffered the greatest relative decline of all, dropping from first to seventh place. In each case, these counties had increased more rapidly in the per capita yield of other crops combined than in that of wheat, but not to such an extent as to indicate that the acreage devoted to those crops had increased faster than the acreage devoted to wheat.

Green Lake county had made quite a small increase in per capita yield of wheat as well as of "other crops."[41] The other counties showed an increase in per capita yield of wheat amounting to 20 per cent. to 40 per cent., and an increase in respect to other crops of 40 per cent. to 60 per cent. There was no net increase of milch cows in the section as a whole, though Dane and Dodge showed some increase in this respect. The number of swine had declined generally. The increase in the number of sheep was, however, marked, particularly in Columbia and Green Lake counties. There was a net loss in the number of "other cattle," while there was a marked increase in the number of

[39] In general, the increase in live stock in this section was only such as might be expected from the recent settlement of the country.

[40] Dane county suffered a reduced per capita yield partly on account of the growth of Madison.

[41] It will be noticed that Green Lake county reached the maximum of wheat growing a little earlier than the other counties of the group.

horses.[42] On the whole, little tendency toward a more diversified agriculture is apparent and even that was confined to the increase in "other crops"[43] and the increase in the number of sheep.

Iowa county should be grouped with the south-central counties in 1869. There was similar increase in wheat and in other crops. The increase in live stock was, however, much more important. The increase was considerable in milch cows, and marked in "other cattle" and in horses. Jefferson county showed considerable increase in the importance of wheat during the decade, and can, perhaps, be included with the other south-central counties; but there was a stronger tendency toward other crops, the per capita yield having doubled during the decade.[44] The movement in reference to stock growing was entirely comparable to that in the other south-central counties.

Waukesha county may be grouped with the southern counties, Rock, Walworth, Kenosha, Racine, Green, Lafayette, and Grant, as having declined both absolutely and relatively in the culture of wheat during the decade; but the decrease was slight in that county and in Grant county. The increase in the production of "other crops" was marked in this section, ranging from 50 per cent. to 100 per cent. Potatoes, corn and barley showed the largest increase. Oats replaced barley in the southwestern counties. in rapidity of increase. Except in Racine county, there was a marked increase in the total number of live stock per capita. The increase in the number of sheep was large, especially in Kenosha and Walworth and the other southeastern counties. Swine increased to a moderate extent, especially in the southwestern counties. Except in Racine county, there was a marked increase in the number of horses.[45] In the southwestern counties there was an

[42] See Hibbard, *Hist. of Agric. in Dane Co.*, 130.

[43] This increase was largely confined to corn, potatoes and oats. The increase in potatoes is most significant. The increase in wheat and other crops together with the increase in live stock seems to contradict the statement of declining productiveness of the soil. In Dane county the tobacco crop was becoming important, 229,568 pounds being produced in 1869. See Table XXII.

[44] Particularly corn and potatoes. Jefferson county also produced 14,055 pounds of tobacco in 1869. See Table XXII.

[45] It does not seem probable that this increase in horses was entirely incidental to grain growing as appears to be the case in other sections.

important increase in "other cattle," in which Kenosha county also shared.[46] There was a general increase[47] in the number of milch cows, Kenosha, Lafayette, and Green being noteworthy in this respect. There appears to have been no general movement, however, toward dairying.

It is plain that in this section there was a strong movement away from the exclusive culture of wheat, but a movement which as yet had taken no special direction.[48] Nevertheless, wheat remained in general the most important single crop and wheat growing continued to be the most important single pursuit; and it must be acknowledged that where wheat continues to be raised to the extent of from 22 to 24 bushels per capita, there still exists considerable specialization in respect to that crop. The eastern counties, in general, showed a strong tendency toward increased importance in wheat growing. Fond du Lac, however, remained almost stationary in respect to wheat, as also in reference to "other crops." There was considerable increase in the number of sheep, but other live stock remained stationary. In fact, Fond du Lac county showed great stability in every respect during the decade. Winnebago county is entirely comparable in most respects to Fond du Lac county. Kewaunee county suffered a marked decline in wheat growing, as the total number of bushels of wheat raised in 1869 was less than in 1859, though population had doubled and improved land more than quadrupled. With the exception of these three counties, the eastern counties resemble the river counties. There was similar proportional increase in the cultivation of wheat and the same indifference to "other crops." The increase in the number of milch cows in Calumet, Ozaukee and Washington counties was comparable to that in Buffalo and Trempealeau counties. "Other cattle" and horses were less important in the eastern counties, while sheep were more numerous. The absolute importance of the wheat industry was much smaller in the eastern counties,

[46] Walworth county also increased to some extent in "other cattle".

[47] Racine must be again excepted.

[48] The tobacco crop was becoming important in Rock and Walworth counties. The former county produced 645,508 pounds in 1869 out of a total production of 960,813 pounds for the entire state. Walworth produced 46,136 pounds during the same year. (See table XXII).

though the tendency toward wheat was quite as strong. The land was being sowed to wheat, apparently, as fast as it was cleared.

We find a diversity of movement in the interior counties. Richland and Sauk showed a slight loss in wheat, probably due in part to the cultivation of hops, as "other crops" increased but slightly. There was considerable increase in the number of sheep in both counties and of "other cattle" in Richland county.[49] The same general stability appeared in the case of Waupaca and Waushara counties, and the increase in wheat was slight. Potatoes were comparatively unimportant as yet, while considerable rye was raised in Waushara county. The remaining interior counties showed considerable gain in wheat, the increase being most marked in Monroe and Jackson.[50] The moderate increase in "other crops" in the counties of this section consisted of an increase in oats in the northern counties, and of an increase in potatoes and rye in the southern counties of the group. Milch cows were unimportant except in Marquette county. Sheep had increased in number generally, but were especially numerous in Adams, Marquette, and Waushara counties. "Other cattle" were important in Adams and Marquette counties. On the whole, the tendency toward wheat was general and well defined, but was modified by the cultivation of other crops and by the live stock industry in some counties. Lumbering was an important industry at this time in this section and agriculture was slowly increasing in importance as compared with the non-forested region to the south.

To summarize, we may say that in general the eastern and the river counties were tending strongly to wheat,—the river counties being far more important in the culture of that crop, and near their maximum; while the eastern counties were less important but destined to increase in the future. In the south-central portion there was high specialization in wheat, but evidence of a change about to take place. The situation was somewhat simi-

[49] Swine were quite numerous in both counties.

[50] Other counties showed a greater proportional increase, *e. g.*, Marquette county. During the decade a railroad had been opened through Jackson and partly through Monroe and Eau Claire counties. (See Figure 9.)

lar in the central counties, though wheat was of far less absolute importance. In the southern counties the wheat industry maintained considerable importance, but had declined greatly. Stock raising, together with the growing of corn, barley and potatoes in the southeast, and of corn and oats in the southwest was taking the place of wheat. The most noticeable increase in stock growing in the state as a whole was in sheep and horses,—the number of sheep having increased from .40 to 1.00 per capita, and the number of horses having increased from .15 to .24 per capita. Taking the state as a whole, the increase in swine, milch cows and "other cattle" was slight. Dairying was thus of small importance as yet, except in a few counties to which reference has already been made.[51]

There was a comparatively small increase in oats in the state as a whole. The increase in the corn crop was more important. Potatoes increased from 4.9 bushels to 6.3 bushels per capita. Barley made a good gain, but was still quite unimportant. The per capita yield of "other crops" combined increased about 37 per cent. while wheat increased from 20.18 bushels to 24.28 bushels, an increase of 20 per cent. This would indicate that wheat came very nearly holding its own in the state as a whole, as compared with other crops.[52] Improved land increased 57.5 per cent. during the decade. The acreage in wheat in 1859 was probably about 1,000,000 acres.[53] The estimated acreage for 1869 was 1,568,627 acres,[54] a considerable decline from the previous two years. This would give an increase in acreage amounting to about 57 per cent., thus indicating that wheat had declined little in importance and strengthening the conclusion derived from comparing the increase in per capita yield of wheat and the similar increase in respect to other crops. This conclusion seems also to agree with the position taken in the *Transac-*

[51] The cultivation of flax was of some importance in Iowa and Kenosha counties. (Eighth Census). Pulse was an important crop in Manitowoc, Marathon, and Sheboygan counties. (*Ibid.*)

[52] Equal increase in acreage planted to wheat and to "other crops" combined ought to produce double the increase of total yield in the latter case.

[53] The estimate for the year 1860 contained in the *Rep. of Milwaukee Chamber of Com.* for that year, was 1,062,097.

[54] *Rep. of U. S. Dep. of Agric.* for 1869, p. 30.

tions of the State Agricultural Society for 1868, that while the "old rule of wheat, wheat, wheat" seemed to be giving away at that time to a more rational practice, yet that during "all the past years since 1860" wheat had scarcely lost prestige with the farmers, who because of the scarcity of labor essential to the cultivation of all hoed crops, the increase of mechanical facilities for harvesting and a steady increase in price had cultivated it with even more than former zeal and energy.[55]

[55] *Rep.* for 1861-68 p. 33.

CHAPTER III

THE DECADE 1870 to 1880

The decade 1870–1880 opens with depression in the wheat industry in Wisconsin,[1] and with strained relations between the farmers and the railroads.[2] Between these two sets of circumstances there was a significant connection. Would the farmers be able to force such an increase in facilities of transportation and decrease in freight rates as would enable them to market their wheat with profit, or would they be compelled to substitute other farm pursuits, in which transportation played a minor part, in the place of wheat growing? Facilities of transportation increased greatly during the decade and rates declined, though not equitably.[3] But these advantages were shared by the regions farther west[4] and competition thus robbed the wheat grow-

[1] In an article by W. D. Hoard in *The Tenth Ann. Rep. of the Wis. Dairymen's Assoc.*, p. 63 ff., the statement is made that the average yield of wheat had fallen off fully fifty per cent. from 1850 to 1870 (probably an exaggeration) on account of wasteful methods of agriculture; that the price, too, was fast lessening at the latter period, while habits of extravagance had been engendered by the war, and that there thus resulted a general awakening to the fact that an increasing rather than a declining revenue must be had on the farm.

See also *Farmers' Inst. Bulletin., Wis.* No. 2, p. 196. Also *Sparta Herald,* May 4, 11, and 18, 1869. See *Jefferson Banner,* Aug. 4, 1869; July 13 and Aug. 24, 1870. See *Historical Atlas of Wisconsin,* p. 161,—Snyder, Van Vechten and Co.: 1878. For a description of conditions in the various counties of the state at the beginning of this decade, see *Trans. of State Agric. Soc.,* 1870. p. 375 ff.

[2] See *Madison Democrat,* May 31, 1869; Aug. 18, 1869. *Trans. of State Agric. Soc.*, 1869, pp. 81. 82. 138 ff.

[3] See below pp. 147–96.

[4] See *Northwestern Miller,* Apr. 18, 1879 for an article on *The New Northwest,* where reference is made to the thousands and tens of thousands pouring into western Minnesota and eastern Dakota as a result of the extension of railroad facilities into those regions. See *Ibid*, Nov. 29, 1878. See *Trans. of State Agric. Soc.*, 1878–79. p. 213 ff: 1881–82. p. 181; *Rep. of the Industrial Commission.* 10: 37, 86, 180, 188, 266, 366, 843, et al. (1900). See J. L. Coulter, *History of Agriculture in the Red River Valley* (in course of preparation as a doctor's thesis. University of Wisconsin).

ers of Wisconsin of the expected benefits. In the meantime the more enterprising farmers had turned their attention from wheat growing to other pursuits which promised according to their notion a larger and more certain revenue. Great but not insurmountable difficulties were encountered. Slowly but surely a new order of things began to prevail and by the close of the decade the agriculture of many portions of the state was transformed.[5] It is thus within the decade 1870–1880 that wheat growing suffered its first serious decline in the state as a whole; and, no longer offering exceptional advantages, gave way to farm pursuits in which peculiar advantages were afforded on account of natural and social reasons.

The wheat crops of the years 1870 and 1871 were below the average on account of rust, drought and the ravages of insects. The crop of 1872 was, however, a full average crop, and that of the year 1873 was a bumper crop. Prices were fairly good, but advantage was taken of the heavy movement of traffic to push up the rates of freight, until the farmer complained that it cost him all his wheat was worth to get it to market. During 1874, 75 and 76, the chinch bugs again ravaged the wheat fields in the southern and central parts of the state. The northern and eastern parts of the state were exempt from the pest and there good crops were secured.[6] The crop of 1877 was again a good one, of large yield and good quality, and on account of the war between Russia and Turkey, the foreign demand was good and prices were better than for several years. This was sufficient to encourage the wheat growers again and an increased acreage was sowed in 1878.[7] Unfavorable weather conditions greatly injured the crop when near being matured, and as there was an immense crop in the United States as a whole,[8] the price

[5] See below pp. 80–1. See *Trans. of State Agric. Soc.*, 1875–76, p. 374 ff; 1877–78, p. 100 ff; 1888, p. 180. Also *Second Ann. Rep., Wis. Dairymen's Assoc.*, pp. 9–12. *Ibid., Seventh Ann. Rep.*, p. 29. Also *Trans. Northern Wis. Agric. and Mechanics Assoc.*, 1880–81, pp. 68–70.

[6] *Trans. of State Agric. Soc.*, 1874–75, pp. 23. 133–35; 1875–76. pp. 23. 328; 1876–77, pp. 140–44. See *Rep. of Milwaukee Chamber of Com.* for 1877.

[7] See Table IV. See *Trans. of State Agric. Soc.*, 1876–77, p. 227 ff; 1877–78, pp. 41–2: 1878–79, p. 1.

[8] See Table VI.

declined, so that the unfortunate wheat grower in Wisconsin lost, both coming and going. The crop of 1879 seems to have been a good average crop as far as total yield was concerned, but the yield per acre had been declining and the average for the state was low.[9]

The relation of the facts concerning the wheat crops of the decade is thus painfully similar to that of previous decades. There was the same alternation of short crops, average crops and bumper crops; the same story of drouth, of rust, of insect ravages. There were the same assertions of declining yield and the same statement of high yields. There was much condemnation of exclusive cropping to wheat and an occasional acknowledgment that it was still the staple of the state and likely to so continue so long as there was so much money in it. There was the same old complaint about the extortions of the railroads, though competition was so keen in 1879 that in some places wheat was carried for nothing.[10]

These apparently contradictory assertions are probably all true if said of a particular place at a particular time. Conditions varied so much in different parts of the state even during the same year that general statements can hardly be made with any degree of accuracy.

Inspection of the wheat chart for 1879 and comparison with that of 1869[11] show the partial withdrawal of the wheat industry from the central and southern portions of the state. The wheat area in Wisconsin had divided into two parts, which the rapid decline of the following two decades was to diminish and leave as remnants on the eastern and western borders. For the present, though, there had been further extension in the extreme northeast, and in the far northwest, and wheat had in-

[9] See Table V.

[10] *Hist. of Fond du Loc County* (West Hist. Co., 1880), p. 694. For failure in wheat culture see *Trans. of State Agric. Soc.*, 1871, p. 241; 1874–75, pp. 23, 141, 275; 1875–76, pp. 305, 343, 377; 1877–78, p. 101; 1878–79, p. 1. See also *Ibid.*, 1870, p. 11 ff. and 1872–73, p. 159. For view that wheat is the "great staple" and must so continue, see *Ibid.*, 1872–73, p. 388; 1873, crop summary; 1875–6, p. 336. For complaint of inadequate facilities of transportation and high freights, see *Ibid.*, 1872–73, p. 159; 1873–74, pp. 55, 93, 174, 196, 233, 297, 429–35; 1875–76, pp. 73, 377.

[11] See Figures 3 and 4.

creased in importance around Green Bay, and in Polk, Barron, and Burnett counties. By referring to Table III, it is seen that the numerical index of specialization is smaller than in 1869 in the case of every order of rank from the first to the last place. By reference to Table IV, however, it is seen that in the case of particular counties wheat was more important than in 1869. The river counties, St. Croix, Buffalo and Pierce, held first, second and third places respectively, with Trempealeau fifth, Polk eighth and Pepin eleventh. That section thus maintained its dominance in wheat growing. St. Croix, Buffalo, Trempealeau counties, together with the other older river counties, had, however, decreased considerably in absolute importance, while the newer counties, Pierce, Polk and Pepin, had increased. Still, all the counties of this group uniformly showed a moderate gain in "other crops," though to a greatly varying extent. Buffalo and St. Croix showed but small increase in this respect, while Pierce and especially Trempealeau showed considerable gain. In Vernon and Crawford counties the gain in "other crops" was large. Generally speaking, this gain in "other crops" represented decline in wheat growing. Inspection of the tables for "other crops" shows that the increase was pretty well distributed among all the different crops. This indicates that the farmers of this section, finding the growing of wheat less profitable than formerly, were casting about for a substitute crop, without having decided on any particular crop as yet. Further increase in the number of milch cows in Buffalo, Crawford, Trempealeau and Vernon counties shows how some farmers were solving the problem. Crawford and Vernon counties particularly reflect the general increase in the number of swine. Sheep had scarcely held their own during the decade. "Other cattle" had increased most of all. Buffalo and Pepin showed a moderate decline in this respect, while in Crawford, Pierce and Trempealeau counties the increase was marked. There was a general increase in the number of horses, which was marked in Vernon and Crawford counties.[12] So far, then, as there was a change from wheat cul-

[12] It would appear that the increase in horses is too marked to be considered as merely incidental to grain growing.

ture to the live stock industry in this section, it was in general in the direction of "other cattle" and horses, though dairying was increasing in a few counties in an important way. Wheat remained, however, by far the most important single crop and its cultivation the most important pursuit.

When we turn to the south-central group of counties we find a very striking decline in wheat growing.[13] Dodge county presented a partial exception to this statement, having declined only from fourth to seventh place, while Green Lake held seventeenth place, Columbia, twenty-sixth, and Dane, thirty-seventh place. Jefferson retained thirty-third place, though showing an absolute decline in importance. All these counties showed large gain in other crops. Inspection of the separate tables for other crops proves that this increase was especially in corn, oats and barley,—the latter crop showing the most noteworthy increase.[14]

Turning to the tables for live stock, we find here a noticeable increase. Foremost in significance if not in actual numbers was the increase in the number of milch cows. This increase was marked in Jefferson county. This tendency represented the growth of the dairy industry in this section and was really the index of the displacement of wheat, as corn and oats are crops largely supplementary to dairying. There was a considerable increase in the number of swine, however, and this helps to account for the increasing amount of corn grown. Sheep showed considerable increase in Columbia and Green Lake counties. "Other cattle" had in general almost doubled in importance, while horses shared to some extent in the general gain. By referring again to Table III, it is seen that the decline in wheat growing was much more marked in Dane than in the other counties of this group. This is explained by the marked increase in the tobacco crop in Dane county, that county producing 5,371,242 pounds in 1879 or a little over 50 per cent. of the entire crop of the state for that year. Jefferson also produced a considerable amount of tobacco.[15]

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[13] See Figure 4.

[14] In Columbia and Green Lake counties, rye showed a similar decrease.

[15] See Table XXII. See Hibbard, *Hist. of Agric. in Dane Co.*, 155–75.

We may sum up the facts in reference to this section by saying that there had been a great decline in wheat growing and that general farming had taken its place preparatory to the more specialized industry of dairying, which showed a most signfiicant, but as yet, not striking growth. In Dane county, the tobacco crop had to an important extent added to the general displacement of wheat.

The eastern and northeastern counties showed uniform increase in the importance of the wheat crop, except Calumet, Sheboygan and Winnebago counties, which had suffered a moderate decline. The continued influence of the forest environment in causing a more gradual and more prolonged development of the wheat industry was the most characteristic feature. Other crops had increased as well as wheat,—had, in fact, almost doubled in per capita yield in the three counties in which wheat had declined.[16] One gets the impression in respect to this section that wheat had never been the one overwhelming crop. It remained, however, by far the most important single crop. Barley was the only other crop showing noteworthy increase, though small in absolute importance as yet.

The small though, in general, increasing importance of the live stock industry in this section was characteristic, though Calumet, Fond du Lac, and Washington counties present a partial exception to this statement. The most general increase in live stock was in milch cows and in "other cattle." In Calumet, Ozaukee, Sheboygan, and Washington counties the increase in milch cows was noteworthy. Fond du Lac, Kewaunee, and Manitowoc counties also showed some gain in milch cows. "Other cattle" showed the most general increase. Sheep had remained about stationary. There had been a moderate increase in the number of horses in most of the counties of this section. In Calumet, Ozaukee, Sheboygan, and Washington counties this increase was important.

The general tendency away from the wheat crop in the state as a whole was in this section reflected rather in its more slowly increasing importance. Undoubtedly the large home market for

[16] Outagamie also had a little more than doubled "other crops."

bread-stuffs and the importance of the milling industry in this section had contributed to the stability of the wheat industry.[17]

The southern tier of counties had almost abandoned wheat growing. Iowa and Walworth constitute partial exceptions, the decline there being comparable to that of the south-central group. In Rock, Kenosha, Green, Lafayette, and Grant (to a less extent), the decline in wheat growing was excessive. The ravages of the chinch bug had been an important factor in this displacement of wheat.

What had taken the place of wheat in this group? "Other crops" combined show a marked increase, amounting to from 60 per cent. to 100 per cent This increase was most marked in corn, which had increased about 100 per cent. in most of the counties. Oats showed the next largest increase,—from 50 per cent. to 100 per cent. Potatoes had declined, while Rock and Walworth counties showed important increase in the amount of barley raised. In Rock county, tobacco had displaced wheat to an extent comparable to that already noticed in reference to Dane county, though the increase in the tobacco crop was a little less marked. Several of the other counties of this group had also turned to tobacco, though in a much less important degree.

It is when we turn to examine the tables for live stock, however, that we get a full comprehension of the great change in agriculture in the southern counties during the decade. Milch cows had increased to a striking extent,—especially in Green, Iowa, Lafayette, Rock, and Walworth counties. Green county[18] now held first place among the counties of the state both in the number of milch cows and in the rapidity of increase during the decade.[19] The increase in "other cattle," in swine, and in horses, together with a moderate in-

[17] See below p. 105.

[18] "The worn-out wheat fields of Green county are being refertilized by the thousands of cows which find pasture where poor crops of grain and big crops of chinch bugs used to flourish, and the whole community saved from distress the past year by the great change in husbandry." Quoted from the Monroe *Sentinel* in the *Seventh Ann. Rep. of the Wis. Dairymen's Assoc.*, 125.

[19] Here natural and social factors combined in an especial way to favor dairying, and it is proof of the strong influences tending to retain wheat as the staple crop that dairying did not displace that industry at a much earlier period. See *Bulletin of the Agric. Exper. Station, Univ. of Wis.*, No. 60, p. 18.

crease in the number of sheep showed, however, that the movement toward dairying was accompanied by a movement toward general stock raising. In the marked tendency away from wheat growing, dairying occupied a growing but as yet not a dominant, position.

Waukesha county remained just about constant during the decade in reference to the wheat crop. Stability characterized the development of its agriculture during the decade. The increase in the per capita yield of other crops combined amounted to nearly 50 per cent., and was distributed among the various crops, with the exception of potatoes, which showed a decline. The increase in the amount of barley grown was noteworthy. There was a general increase in all kinds of live stock, including milch cows as representing dairying. In this general increase wheat shared to a very trifling extent. It remained, however, the most important single crop.

The interior group of counties showed diversity in respect to the development of the wheat industry during the decade. Eau Claire, Richland, and Burnett counties showed increased importance in wheat growing, Dunn and Clark remained about constant, while the remaining counties had declined in that respect.[20] On the whole, this section showed a very considerable decline in wheat growing. Other crops showed very considerable increase. Adams, Marquette, and Waushara counties had to considerable extent substituted rye for wheat. Juneau, Marquette, Portage, Sauk, Waupaca, and Waushara counties showed a tendency toward potatoes. Oats, in a general way, shared in the displacement of the wheat crop. Adams, Marquette, Richland, and Waushara counties reflected in an especial way the general tendency toward dairying, by a considerable increase in the number of cows. The general movement in the state as a whole in reference to swine and sheep was reflected by an increase in the number of swine and stationary conditions as to sheep. As in other sections of the state, there was a noteworthy increase in the number of "other cattle" and a moderate increase in the number of horses.

[20] Barron is indeterminate, but shows considerable absolute importance in wheat growing.

The characteristic feature in this section is that there was already a strong tendency toward rye and potatoes, which were in the future to replace wheat to an increasing extent. That is, there was a growing specialization in reference to particular crops other than wheat. Peculiarities of soil afford the explanation of this tendency. On the other hand, there was no particular tendency toward specialization in the live stock industry. The wheat crop was still one of much importance in many of the counties, and the whole section presented the case of a general increase in the importance of agriculture in which wheat failed to share to the same extent as other crops and other pursuits.

In the state as a whole, the per capita yield of wheat declined from 24.28 bushels to 18.92 bushels, or about 22 per cent. The yield per square mile of improved land declined from 2,778 bushels to 1,709 bushels, or about 38½ per cent. The per capita yield of oats increased during the decade from 19.1 bushels to 25.0 bushels, or a little more than 30 per cent. Corn increased from a per capita yield of 14.2 bushels to 26.0 bushels,—an increase of about 83 per cent. In the state as a whole, the increase in the importance of the potato crop was small. Rye and barley were unimportant crops as yet in the state as a whole, but barley increased from 1.6 bushels per capita in 1869 to 3.8 bushels per capita in 1879,—an increase of 137½ per cent. On the whole, the movement away from wheat was not marked by specialization in the growing of any particular crop though oats and rye had increased less rapidly than corn and barley. In particular sections, however, there was some evidence of such specialization. Attention has already been called[21] to the tendency toward barley in the eastern and southeastern counties and to the tendency toward rye and potatoes in some of the central counties. A further exception must be made in reference to the tobacco crop in Dane and Rock counties.

In a like manner there seems to have been a tendency toward general stock raising in the state as a whole rather than to specialization in any particular line.[22] This statement also

[21] See above pp. 76, 78.

[22] The growth of the live stock industry is paralleled by an increase from 1.22 tons of hay per capita to 1.45 per capita. Other forage crops increased as well.

holds good for the individual counties. The number of swine had increased from 0.5 per capita to 0.9 per capita,—or nearly double the number in 1869. Sheep had remained stationary at 1.0 per capita. Horses had increased from .24 to .27 per capita, the increase being general except in the southeastern part of the state, and most important in some of the newer counties where there was a gain in agriculture at the expense of lumbering. The most general and most important increase in live stock, however, seems to have been in "other cattle" which increased from .31 per capita to .47 per capita,—a larger increase than that of all the other decades since 1850 combined. The increase in the number of milch cows from .29 to .36 per capita was well distributed over the state, every county with at least .30 per capita in 1879, showing increase during the decade. The increase in milch cows was particularly important, however, in those counties of the southern part of the state which had declined most rapidly in the growing of wheat. The dairy industry had made an important place for itself in the farm economy of the state; but it was not yet dominant and shared with other pursuits the tendency away from wheat.

Wheat still remained the most important single crop in the state as a whole and, according to the *Tenth Census,* the acreage in wheat in the state as a whole was about equal to the acreage in corn and oats combined. But even this was a great change and a great improvement. It meant the cessation of farming to wheat year after year and the possibility of rotation in wheat culture. It meant the raising of other crops which formed the basis of the live stock industry and thus the retention on the farm of the elements of soil fertility. It meant a partial solution at least of the problem of transportation as it affected the farmer. Not the least of all it meant a better and happier life for the farmer,—more stable and more prosperous conditions and a larger sphere for the exercise and cultivation of all his faculties. The situation at the end of the decade is thus summed up in the *Transactions of the State Agricultural Society.*[28]

"As our herd increase, our acres of grass multiply and a

[28] *Trans.,* 1879-80, pp. xxi and xxii.

better system of farming is being pursued in Wisconsin. Sections of wheat are a thing of the past. Mixed husbandry is universal and our people are wiser, happier and richer therefor. . . . It may be truthfully said that the farmers of Wisconsin have reached the time and laid hold of the principles promulgated by the order of the Patrons of Husbandry 'that they would sell on the hoof and in the fleece and not from the half-bushel.' It may safely be said that Wisconsin has passed that period of speculation, heavy loans, and exhorbitant interest, incident to the settlement of a new state and has now entered upon a career of stability and solid, permanent growth."

CHAPTER IV

THE DECADE 1880 to 1890

If it was during the decade 1870–1880 that wheat growing suffered its first serious decline in Wisconsin, and if it was during the same decade that the other crops and other pursuits which were to displace wheat first took firm hold, it remained for the following decade to see these tendencies, under the influence of the varying conditions that prevailed, work out their full effect in almost completely driving wheat growing from the state. Comparison of the charts for 1879 and 1889 reveals the extraordinary extent to which this occurred. It was as if some mighty power had brushed to right and to left, leaving but a few patches of wheat on the outside edges of the state.

The acreage sowed to wheat declined during the decade from 1,948,160 acres to 744.080 acres,—a decrease of 62 per cent. The total yield declined from 24,884,689 bushels in 1879 to 11,698,922 bushels in 1889,—a decrease of 53 per cent. The per capita yield declined from 18.92 bushels to 6.94 bushels,—a decrease of 63 per cent., while the yield per square mile of improved land declined from 1,709 bushels in 1879 to 764 in 1889,—a decrease of about 55 per cent. Whereas in 1879 the acreage in wheat amounted to as much as that in corn and oats combined, in 1889 the acreage in corn alone was one and one-half times and the acreage in oats alone two and one-fifth times as great as the acreage in wheat. Even barley now exceeded wheat in yield per capita, the relative yields for the whole state being 9.0 bushels and 6.94 bushels respectively.

By referring to Table III, it will be seen that the county that ranked first in 1889 was of no greater absolute importance than the county that ranked fourteenth in 1879. Every county without exception had declined in importance in wheat culture

and every section shared in the decrease. The decline was so extreme as to almost blot out differences between different sections and disarrange the method of grouping previously followed.[1] Buffalo, one of the river counties, held first place, but St. Croix which occupied that place in 1879 had by an unparalleled decline dropped to forty-fifth place. Pepin stood fifth, Pierce tenth, Vernon twelfth, Trempealeau twentieth, and Polk twenty-second. The northeastern group of counties held together better,—evidence of the greater stability in that section—and stood well up toward the top. Calumet ranked second, Washington third, Manitowoc sixth, Kewaunee seventh, Outagamie tenth,—the others standing fairly well up on the list. Of the south-central group of counties, Dodge and Green Lake alone retained any considerable importance. Dodge ranked fourth as against seventh in 1879, but with great absolute decline. Green Lake ranked ninth as against seventeenth in 1879. Columbia, Dane, and Jefferson had also declined upwards. At the bottom of the list were the southern counties together with some from the interior group. Monroe ranked eighth, having risen from nineteenth place in 1879. The extraordinary decline of a few counties like St. Croix and Chippewa caused many of the other counties to advance in rank, though having declined greatly in absolute importance.

St. Croix and Buffalo counties having stood side by side in rank at every previous census period since they were important enough to be considered at all, a comparison of the two now so widely separated in rank may prove interesting. Other crops—especially oats and potatoes—had increased to a considerably greater extent in St. Croix county, during the decade, than in Buffalo county. The same statement holds true with reference

[1] Inspection of the table giving the total yield of wheat in the state for each year shows that it was not until about the middle of the decade that the decline in wheat growing in the state as a whole set in seriously. Inspection of the statistics furnished in the reports of the Secretary of State also show how the acreage and total yield for the various counties began to fall off about that time. Reference to the tables giving the price of wheat in New York, Chicago, and Milwaukee shows that beginning with about 1884 there was a considerable and prolonged decline in the price of wheat. This fact, together with the depression already existing in the wheat industry and the further fact that dairying and tobacco growing had already taken a strong hold, must account in the main for the rapid decline in wheat.

to live-stock other than milch cows and horses.[2] This explains in part the extreme reaction from wheat growing in the former county. Apparently the farmers of St Croix county took advantage of the depression in wheat growing to substitute other crops, and to stock up their farms inasmuch as there had formerly been an almost entire absence of live stock in that county. Previous excessive specialization in wheat growing in St. Croix county was now followed by a general rush to get out of that and into something else. Apart from the low price of wheat, however, the extraordinary ravages of the chinch bugs constituted an additional very important cause of the decline in the growing of wheat in that county. As the wheat crop afforded the best nurse for the pest, other crops were likewise endangered by the cultivation of that crop and this constituted a further reason for its discontinuance. Later, however. the expedient of sowing other grains with wheat was adopted with considerable success. The chinch bug ceased its depredations to a considerable degree, and, after all, the withdrawal from wheat, to so extreme an extent, in St. Croix county proved temporary as that county held second place in wheat growing in 1899.[3]

Since there was a general decline in wheat and a consequent disarrangement of groups, it is preferable to take up the different crops and the different branches of live stock and examine to what extent each was instrumental in displacing wheat, rather than to take up the counties by groups. The large increase in the oats crop has already been noted. This increase was general except in the southeastern counties. The actual increase in acreage amounted to 70 per cent.

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[2] Cows increased in number per capita about equally in the two counties, while horses increased considerably in Buffalo County and decreased slightly in St. Croix county. The decline in horses in St. Croix county was doubtless incidental to the decline in wheat growing.

[3] By referring to the statistics furnished in the report of the Secretary of State it is seen that the decline in wheat growing in St. Croix county had been going on for several years. The rural population was, however, proportionally smaller in St. Croix county and account must be taken of this fact.

The above information was obtained in conversation with a man who was engaged in farming in St. Croix county at that period.

See also references, p. above, as to the ravages of the chinch bugs in 1887 and proximate years in Wisconsin.

It has been seen that the acreage in corn increased relatively to wheat during the decade. There was practically no actual increase in acreage, however, and the yield, partly on account of a poor crop, declined. Some of the western and interior counties, however, increased considerably in corn,—particularly Adams, Buffalo, Dunn, Pepin, Pierce, Portage, Trempealeau, and Waushara.

Potatoes increased about 50 per cent. in per capita yield during the decade. This increase was most marked in the interior and in the western counties. Adams, Barron, Pierce, Portage, St. Croix, Waupaca, and Waushara were most noteworthy in this respect. Ozaukee, Washington, and Waukesha counties were important in the eastern section.

Rye also increased about 50 per cent. in per capita yield in the state as a whole. The increase was distributed to every part of the state except the southeastern counties. Adams, Marquette, Pierce, Polk, St. Croix, Kewaunee, and Manitowoc were among the most important.

Barley increased 137 per cent. in per capita yield. The increase in cultivation of this crop was strongly localized and was confined chiefly to the eastern, south-central and southeastern counties. Pierce in the west also showed exceptional increase in barley.

Milch cows again increased in every county in the state during the decade. The per capita increase in the state as a whole amounted to .11 per capita, the largest increase for any decade in the history of the state. The increase was not confined to the counties which had declined excessively in wheat growing, but was most important in those counties; it was most marked in the southern and in the eastern sections. Buffalo, Trempealeau and Richland counties were especially noteworthy in other parts of the state.

Swine declined in the state as a whole from .9 to .8 per capita. In the southwestern counties and in the northern river counties there was some increase. Sheep declined from 1.0 per capita to .6 per capita. There was a slight increase, however, in the western counties. "Other cattle" increased but slightly in the state as a whole,—from .47 to .49 per capita. Not a few counties

showed a per capita decline in this respect. Grant, Iowa, Lafayette, and Trempealeau counties, however, showed very large increase in number of "other cattle." Buffalo, Crawford, Jackson, and Richland counties showed large increase in the same respect.

Horses remained at .27 per capita as in 1879. A decline in horses in the eastern, south-central and southern counties was balanced by a gain in the interior and western counties.

The tobacco crop had nearly doubled within the state during the decade. Dane county produced almost as much tobacco in 1890 as was produced in the whole state in 1880. Rock county also showed large increase in this crop, while Jefferson county produced more tobacco in 1890 than Rock county did in 1870, and Rock county in 1870 produced two-thirds of the entire crop of the state. Columbia, Vernon, Green, Crawford, Grant, Walworth, Lafayette, and Pierce counties also showed large gains in the tobacco crop.[4] Though the increase in the tobacco crop was by no means so regular and uniform as appears from the figures given at the different census years[5] there can be no doubt that tobacco was fast displacing wheat in those sections where the soil was best adapted to the former crop, and the fact that the crop after all showed a large net increase at the close of each decade is proof that, on the whole, it was found profitable. Unlike dairying, the tobacco crop was largely localized and hence displaced wheat in a merely local way. As has been already noted, however, the extent to which it displaced wheat was out of all proportion to the acreage which it occupied.

In 1889 but 428,547 pounds of hops were produced in the entire state. Juneau and Portage counties produced together about 57 per cent. of the entire crop of the state, each producing about equal amounts. Sauk county produced less than one-third as much as either of these counties. Columbia, La Crosse, and Milwaukee counties produced the most of the remainder.[6]

It thus appears that wheat was being largely displaced by

[4] See Table XXII.

[5] See Hibbard, *Hist. of Agric. in Dane Co.*, 159-60 for a discussion of the ups and downs in the tobacco producing industry.

[6] *Eleventh Census of the United States.*

oats in every part of the state except in the southeastern and in a few of the eastern counties; that potatoes were to an increasing extent being substituted for wheat in the interior counties and in the western counties; that rye was increasing in the state generally, except in the southeast; that barley was gaining largely at the expense of wheat, and perhaps of corn also, in the eastern, southeastern and south-central counties. Corn, on the other hand failed to increase with the increase of population and improved land, although losses in some sections were balanced by gains in other sections. It is legitimate to conclude that in the western and in the interior counties the increase in corn was at the expense of wheat.

The general and marked tendency toward stock-growing in all of its branches, except sheep husbandry, noted at the close of the last decade, had spent its force and there were either declines or only small increases during the decade in all branches of that industry proper.[7] In dairying, however, there was a

[7] At the beginning of the decade attention was called to the high price of land where dairying was pursued and it was pointed out that on such land Wisconsin could not compete with the cheaper lands of Texas and Kansas for the production of beef cattle and other live stock. (*Trans. of State Agric. Soc.*, 1879-80, pp. 210-11.)

The following table shows the relation between the value of land in various counties in 1879 and 1889 and the increase or decrease of neat cattle during the decade in the same counties. In a general way it shows important increase of neat cattle in the counties with lower priced land, and a decrease where land was comparatively high in value. In some cases there was large increase in the number of milch cows with comparatively low value of land. This, however, does not invalidate the general principle. (From tables XXIII, XIX and XVIII.)

The total per capita increase in "other cattle" from 1880 to 1890 in Kansas, Nebraska, and Texas combined—states in which the value of land may be supposed to have been considerably less than in Wisconsin, was from 1.64 to 1.94 or .30 per capita. The corresponding per capita increase in the number of milch cows in these three states was from .39 to .47. These figures may be compared with the corresponding increase in Wisconsin for the decade—from .47 to .49 in respect to "other cattle" and from .36 to .47 in respect to milch cows. (See Tables XVIII and XIX). It thus appears that milch cows were just as numerous per capita in these three states taken together in 1890, as in Wisconsin, though the rate of increase had been somewhat smaller during the previous decade. It is probable, however, that equal numbers of milch cows were much more significant for dairy purposes in the latter state than in the former three states.

On the other hand both in absolute number of "other cattle" per capita and in the per capita rate of increase during the decade in respect to the same, Wisconsin was very much less important than the three other states

marked increase, which, like the decline in the culture of wheat, was exceptional in that it affected every county in the state that had ever been important in the wheat growing industry. We are accordingly warranted in concluding that dairying had most of all displaced wheat growing, but that it had also gained at the expense of other pursuits in some sections of the state. Dairying by 1889 had become the great dominant industry of the state. Wheat was no longer the staple. The dairy product was supreme.

On the whole then the development of agriculture during the decade was toward specialization. But it was the kind of specialization that profits,—the specialization that assigns certain pursuits to sections to which they are best adapted, and best of all, which maintains the proportion of diversity that gives balance to a well ordered agricultural economy.

In this decline in the production of wheat within the decade, which was accompanied by a turning to other farm pursuits and especially to dairying, the ravages of the chinch bugs, already noted in reference to St. Croix county, played no inconsiderable part. It was estimated that the loss in the wheat crop in Wisconsin, due to this source, in 1887, amounted to 3,004,490 bushels, while the menace to other crops by a con-

taken collectively. (The per capita figures for Kansas, Nebraska and Texas are worked out from the statistics of the *Tenth* and *Eleventh Censuses of the United States.*)

Counties.	Value of land. Per acre.		Neat Cattle. Per capita.		Milch Cows. Per capita.	
	1879.	1889.	1879.	1889.	1879.	1889.
Buffalo	$27.59	$22.96	.65	.90	.43	.71
Calumet	53.50	64.79	.48	.58	.44	.81
Crawford	23.33	25.31	.53	.88	.35	.56
Grant	28.27	36.73	.84	1.37	.45	.74
Green	34.53	47.62	1.21	1.19	.87	1.32
Iowa	29.58	33.54	1.09	1.65	.57	.95
Jefferson	45.92	65.22	.52	.49	.57	.89
Kenosha	33.55	55.61	.67	.51	.58	.76
Lafayette	30.99	42.91	1.25	1.85	.66	.92
Rock	46.76	60.33	.70	.65	.46	.52
Trempealeau	25.50	23.35	.65	1.04	.44	.93
Walworth	44.71	62.30	.62	.58	.56	.92
Waukesha	60.11	90.82	.42	.39	.47	.58

tinuation of wheat growing was shown by a further loss of 1,804,250 bushels in the corn crop and 1,742,750 bushels in the oat crop from the same cause.[8]

The most general and most immediate cause of the decline in wheat growing during the decade, however, was the persistently low level in the price of wheat which, after the fluctuations of the previous years, was reached about 1884.[9] This decline in price was decisive in making wheat growing unprofitable in Wisconsin and thus reënforced those other more ultimate causes of decline which had long been in operation and which have been taken up below for discussion.[10] While conditions in Wisconsin necessitated a higher price for wheat in order to meet increasing cost of production, a growing surplus of wheat in the markets of the world resulted in declining prices. This surplus had its most important source in the increase of the wheat growing area west of the Mississippi river in the United States—especially in Minnesota, the Dakotas, and Kansas. This expansion which had been going on steadily for a number of years increased greatly after 1878 and in 1884 reached a maximum for the decade of about eighteen and one-half million acres, at which figure the acreage remained for the rest of the decade, with the exception of a temporary decline in 1885.[11] The volume of wheat shipped from the United States to Europe during the three years 1878–79 to 1880–81, "amounted to nearly five hundred million bushels or more than double the greatest quantity exported in any triennial period prior to 1878–79," and thereafter the price of wheat was downward "in all the markets free to American grain."[12] The wheat growing area in the Dakotas increased from 720,000 acres in 1882 to nearly 5,000,000 acres in 1892, while the railway mileage within the same territory increased from 1,225 miles in 1880 to 3,556 miles

[8] *Rep. of the Com. of Agric.*, (U. S.) for 1887, p. 56.

[9] See Tables VII–IX.

See also *Journal of Pol. Econ.*. 1: 372. See *Ibid.*, pp. 68-103 for an article—*The Price of Wheat since* 1867—by Professor Thorstein B. Veblen.

[10] See Chapter X.

[11] See "table of the acreage of wheat in the United States" in *Journ. of the Roy Statist. Soc.* vol. 58, between pp. 82 and 83.

[12] *Ibid.*, 83.

in 1886, and to 4,705 miles in 1890. The wheat area continued to increase in Minnesota also throughout the decade notwithstanding the decline in price.[13] The significance of these facts is that wheat grown on these cheap, fertile lands came into competition with the wheat grown on the higher priced, exhausted lands of Wisconsin.[14]

Further, exports of wheat from Russia which had increased only about seventy millions of bushels from 1869 to 1883, increased nearly one hundred million bushels from 1884 to 1888 and still more rapidly thereafter.[15] Still further, exports of wheat from India, which had been comparatively insignificant previous to 1880–81, averaged over thirty-one million bushels per annum for the following ten years.[16]

Under the influence of the large supplies thus thrown upon the markets of the world, the average price of wheat declined in Great Britain from 5s. 5 3-4d ($1.33) in 1879 to 3s. 8 1-2d ($1.00) in 1889, while the average price of No. 2 spring wheat declined in Chicago from $.975 (4s. 0d) in 1879, to $.74 (3s. 1-2d.) in 1887, and to $.848 (3s. 5 1-4d.) in 1889.[17] It was this decline in the price of wheat which in part compelled and which in part afforded the opportunity for the marked change to dairying and other farm pursuits more profitable than wheat growing.

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[13] *Ibid.*, 84.

[14] See *Ibid.*, 98, where the cost of production in the Dakotas, the center of the most rapid expansion in the wheat area, as compared with the cost in the western states, in general, (including all the rest of the wheat growing states west of Pennsylvania and east of the Rocky Mountains) is given as 57 to 70.

[15] *Ibid.*, 89.

[16] *Ibid.*, 93–4.

[17] *Ibid.*, 86, 101. Compare with Table IX.

CHAPTER V

THE PERIOD AFTER 1890

The decade 1890–1900 need not detain us long. The same agencies continued to operate in the displacement of wheat in the state as a whole. The yield per capita for the entire state declined from 6.94 bushels to 4.35 bushels,—or approximately 37 per cent. Wisconsin no longer raised sufficient wheat for her own needs. The decrease per square mile of improved land was from 764 bushels to 512 bushels,—or 33 per cent. The acreage in wheat had declined to 555,614 acres,—a decrease of 25 per cent. The acreage in corn increased 34 per cent., and was now almost treble the acreage sowed to wheat. The acreage in oats increased 45 per cent. and now amounted to more than four times the acreage in wheat. The acreage in barley equalled, and the acreage in rye amounted to more than 65 per cent. of the acreage in wheat.[1] The per capita yield of oats increased from 36.0 bushels to 40.6 bushels; of corn from 20.2 bushels to 25.8 bushels; and of potatoes from 9.9 bushels to 11.9 bushels. In rye and in barley the per capita yield remained at 2.5 bushels and 9.0 bushels respectively as in 1889.[2]

Inspection of the chart of the wheat area in 1899[3] shows what a slender foothold wheat growing had come to have in the state at that time. Two small areas in the neighborhood of Green Bay and Lake Winnebago in the east and near the great bend of the Mississippi river on the west were all that remained of the great field of wheat that once covered the southern half of Wisconsin from lake to river. By 1899 the upper river counties had again

[1] *Twelfth Census of the United States.*
[2] See Tables XI–XIV.
[3] See Figure 6.

asserted their supremacy in respect to the relative importance of the different sections in wheat growing. Buffalo retained the lead secured in 1889, but showed considerable decline in the absolute importance of the wheat crop. St. Croix by as sudden, and by almost as extreme a change as had occurred in the previous decade when a great decline was shown, again stood next to Buffalo county, but holding second place. A very large absolute gain since 1889 was thus shown in the former county, though still not one-third as important as in 1879. Polk held third place and Pierce fifth. Trempealeau and Pepin held tenth and eleventh places respectively, while Vernon and Crawford ranked fifteenth and eighteenth respectively. The importance of the eastern section was represented by Calumet in fourth place,—a decline from second place in 1889. Kewaunee, Door, Manitowoc, and Brown follow in order, holding sixth, seventh, eighth, and ninth places respectively. The remaining counties of the state were so unimportant that discrimination in rank is almost entirely without significance.

Buffalo, however, produced in 1899, 27.1 bushels of wheat per capita, which was higher than the average for the state when wheat culture was at its height. St. Croix, Calumet, Pierce, and Polk follow with 21.4, 17.5, 16.7, and 16.3 bushels per capita respectively. Polk and Pierce as well as St. Croix showed an absolute increase in the importance of the wheat crop, the increase being considerable in Polk. Trempealeau remained almost stationary. There thus appeared a general though moderate reaction in favor of wheat growing. A similar return to wheat appeared in the eastern group of counties, though to a smaller extent. A few other counties in the western part of the state and in the interior showed a similar tendency. The partial reaction in favor of wheat in the river counties was, generally speaking, accompanied by either a decline or a small increase in other crops, with the exception of barley, which showed a large gain. Buffalo, Pepin, and Trempealeau, however, made quite large gains in oats, and the first two showed a moderate increase in corn. The potato crop had declined most of all, and in all of the counties of the western group.

In the eastern counties there was a general increase in oats,

potatoes, corn, and especially in barley. The increase in barley was large and in oats, potatoes and corn moderate. Corn was, of course, of small absolute importance in this section. Rye about held its own. This general increase in other crops in the eastern section signifies in part the more moderate extent of the reaction in favor of wheat in some of the counties of that section, and in part the further moderate and prolonged growth of agriculture as a whole.

In the river counties, the loss in the number of milch cows in Pierce and Trempealeau counties and the fact that milch cows showed little or no increase in Pepin, St. Croix, and Vernon counties indicate that the change from wheat growing to dairying during the previous decade had been too rapid and extreme to be permanent in those counties.[4] Buffalo, Crawford, and Polk

[4] If we take "dairy cows 2 years old and over" and "other cows, 2 years old and over" as together equivalent in the *Twelfth Census* to "milch cows" in the previous censuses, there would still be a decrease from .52 milch cows per capita to .51 per capita during the decade in Pierce county, and a decrease from .93 to .81 per capita in Trempealeau; while the increase in Pepin would be only from .50 to .56, in St. Croix, from .50 to .53, and in Vernon .59 to .66. If it be objected that the population of the state was becoming urban to such an extent as to vitiate the per capita figures for milch cows, it can readily be answered that the per capita figures for other live stock and for grains would be vitiated in an equal proportion, so that for purposes of comparison the figures would still remain valid and significant. Further, while milch cows (including both classes of cows 2 years old and over) increased in actual number only 7 per cent. in Trempealeau county and only 15 per cent. in Pierce county, improved land increased 24 per cent. in the former and 21 per cent. in the latter. In *Bulletin of the Agric. Exper. Stat., Univ. of Wis.*, No. 88, *Dairy Industry in Wisconsin*, (Sept. 1901), p. 9, it is pointed out that according to the growth in the number of cheese factories, creameries, and combined factories there had been a "remarkable development" of the dairy industry in the north-central and the northwestern portions of the state during the previous five years. By referring to p. 10 of the same bulletin, however, it will be seen that in spite of the failure of milch cows to increase as fast as as improved land in Trempealeau and Pierce counties, the former county gained four cheese factories, two butter factories and one combined butter and cheese factory, and the latter gained three cheese and fifteen butter factories, while in Pepin and Vernon counties where milch cows increased faster than improved land there was a loss of two butter factories in the former, and a loss of one cheese factory and five butter factories as against a gain of one "combined" factory in the latter. In St. Croix county, too, milch cows increased in actual numbers 21 per cent. while improved land increased 23 per cent. and there was an increase of one cheese factory, two skim stations and five butter factories. Accordingly it appears a doubtful method to estimate the growth or decline in dairying by the increase or decrease in the number of dairy factories. The relative size of the factories and the relative importance of dairying on the farm must also be considered. (See *Bulletin of the Agric. Exper. Stat., Univ.*

counties, however, showed further important increase in the number of milch cows. It is significant that three of the former counties[5] had either increased or remained constant in wheat growing during the past decade, while all but one of the latter counties had declined to a further extent in that respect.[6] The very great increase in the tobacco crop in Crawford and Vernon counties must also be noted in accounting for the decline in wheat in those counties. The acreage in tobacco in Crawford county in 1899 amounted to 1121 acres and the amount of tobacco produced was 1,509,830 pounds. In Vernon county the area in tobacco for the same year was 3,833 acres, and the crop amounted to 4,759,520 pounds. This constituted an enormous increase in both counties. The northeastern counties gave further proof of stability and of the absence of any marked tendency toward wheat growing again, by a moderate but general increase in the number of milch cows and thus in the importance of dairying.[7]

There is nothing further in reference to the live stock industry in these two sections that does not seem to be common to other sections of the state, and that does not thus appear to be irrelevant to the wheat industry, since in the remaining sections of the state that crop had so completely disappeared. Of the counties adjacent to these two sections and which were of considerable importance in 1889, some few remained moderately important in wheat growing, though in general having declined to a greater or less extent. The most important of these are Shawano, Jackson and Monroe. Shawano county seems to show nothing at variance with the conditions in the northeastern counties just discussed unless in the more rapid increase in the number of milch cows. This fact has no special significance in

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of Wis., No. 140, [Sept. 1906] p. 4) On the other hand, the total number of gallons of milk produced increased more rapidly than the total number of milch cows, indicating better dairy cows, while the increase in the number of factories probably indicates an increased amount of capital invested in the industry as a whole.

[5] St. Croix, Pierce, and Trempealeau. See Table III.

[6] Polk alone increased in wheat growing.

[7] If, as suggested above, we include both classes of "cows 2 years old and over" as equivalent to "milch cows" of the previous censuses, the increase in dairying appears much more marked.

relation to the wheat industry. Jackson county had remained nearly constant in the production of wheat during the decade, the decline being small. The yield of wheat per capita had even increased slightly. In common with the other western counties there was a considerable increase in the number of sheep, but this is also true of the southwestern counties. In the remainder of the state sheep had declined in number per capita. The increase in the number of horses was also large but this appears to be without special significance in reference to the wheat crop. Monroe county had declined in wheat during the decade. Probably this fact can be connected with the great increase in the tobacco crop,[8] though the smallness of the area[9] planted to tobacco in that county in 1899 precludes laying too much stress upon this point. Unlike Jackson county the increase in the number of milch cows was large. It is legitimate to assume that the increase in dairying was to a certain extent at least at the expense of wheat growing. Burnett, Eau Claire, Barron, and Dunn counties all showed a moderately increased importance in the wheat industry during the decade, but no one was of much more importance than sufficient to meet its own needs. Burnett, Barron, and Dunn differed from the other northwestern counties in the large increase in the amount of potatoes produced. The increase, however, in Eau Claire was slight. Undoubtedly the adaptability of the soil to potatoes, except in Barron county, affords the explanation. The increase in the potato crop probably diminished the area that would have otherwise been sown to wheat. Burnett showed especial increase in the number of milch cows.[10]

Further decline in wheat in Dodge county seems to have been balanced by an increase in corn, oats and barley,[11] while the number of milch cows increased to a marked extent. A similar

[8] See Table XXII.

[9] The area planted to tobacco amounted to 126 acres.

[10] The city of Eau Claire works somewhat to the disadvantage of Eau Claire county in this respect. Inspection of the census figures shows, however, absolutely few milch cows or other live stock in the county.

[11] Dodge county produced 61.1 bushels of barley per capita in 1889 and 73.8 bushels per capita in 1899 and was at both periods the most important county in the production of barley, in the state.

increase in dairying accompanied the further decline of wheat growing in Green Lake county. There was a large increase in oats and corn, and a considerable increase in potatoes in this county, while barley continued of considerable importance as before. Columbia county during the decade quintupled the amount of tobacco produced. This was at the expense of both wheat and barley, apparently, as the latter crop declined almost as rapidly as the wheat crop. An increase in the potato crop was probably partly instrumental in displacing both wheat and barley. The considerable decrease in wheat in Washington county was balanced by an increase in all other crops except in rye. Barley was particularly important. Washington county also showed a very considerable increase in the number of dairy cows. Ozaukee presents a situation similar to that in Washington. The further decline in wheat growing in Fond du Lac county presents no features different from the other counties adjacent.[12] In Richland county there had been an increase in the tobacco crop and in dairying almost exactly parallel to that in Monroe county. The large increase in corn probably had more effect than the tobacco crop in displacing wheat. The increase in corn, oats and potatoes seems to have been responsible for the decline of wheat in Sauk county. The potato crop approximately doubled in per capita yield. The number of dairy cows also increased largely. The considerable decline in wheat in Outagamie county was replaced by an increased amount of oats and corn. The number of dairy cows also increased considerably.[13]

Wheat had become so unimportant in the remaining counties of the state by 1889[14] that it is unnecessary to discuss in detail the further decline or slight increase during the following decade. The potato crop continued to increase largely,—especially in the interior counties. Adams, Juneau, Marquette, Portage, Wau-

[12] The city of Fond du Lac reduces the apparent importance of Fond du Lac county in reference to all crops and live stock.

[13] Corn and oats being in part the basis of dairying cannot exercise their full influence in addition to that of dairying in replacing other crops.

[14] See Figure 5.

paca, and Waushara[15] counties are especially noteworthy.[16] The tobacco crop again more than doubled in the state during the decade.[17] In many of the south-central and southern counties, the further increase in tobacco was instrumental in the added displacement of wheat. The spread of the tobacco crop into some of the newer counties and its probable influence in displacing wheat there has already been noted.[18]

Dairying continued to increase in the state as a whole during the decade, but by no means so rapidly as during the previous decade. The number of dairy cows increased from .47 per capita in 1889 to .48 per capita in 1899.[19] This increase in the number of milch cows was not so general as during the previous two decades; considerable increases in some counties were offset by moderate declines in other counties. The connection between the further increase or decline of wheat growing and the increase or decline in dairying during the decade has been so far as it is important already considered in discussing individual counties or sections. It need only be said here that in a general way an important decrease in wheat growing was apt to be accompanied by a considerable increase in the number of dairy cows

[15] The yield of potatoes per capita in Waushara county increased from 49.9 bushels in 1889 to 119.3 bushels in 1899. The yield per capita in Waupaca county was 49.7 bushels in 1899, but had increased but little during the decade. It is to be noted that the decline in wheat was much greater in Waushara than in Waupaca county during the decade.

[16] See Table XV.

[17] See Table XXII.

[18] See above pp. 94–5.

[19] See Table XVIII. If both classes of "cows 2 years old and over" be included as together equivalent in the *Twelfth Census* to "milch cows" of the previous censuses the per capita increase in milch cows in the state as a whole for the decade is somewhat larger, i. e. from .47 to .52. The following table presented on p. 5 of *Bulletin of the Agric. Exper. Stat. Univ. of Wis.* No. 88, (Sept. 1901) shows that the increase in dairying was, however, absolutely as well as proportionally much greater during the decade 1879–1889 than during the following decade:

	No. of pounds of dairy products made in Wisconsin.	
	Butter	Cheese
1850	3,633,750	400,280
1860	13,611,328	1,104,300
1870	22,473,036	13,288,581
1880	33,842,336	19,535,324
1890	60,355,499	54,614,861
1900	80,000,000	60,000,000

and vice versa.[20] But quite often an increase in wheat growing was accompanied by an increase in the number of dairy cows,[21] and a decrease in respect to the former by a decrease in respect to the latter.[22] The reason is plain: wheat growing had in most sections of the state become so unimportant by 1889 and dairying so important that changes in the latter industry were quite liable to be independent of changes in the former industry. Further, large declines were for the same reason no longer possible in wheat except in a few instances and large increases did not occur. Much the same thing can be said about the live stock industry and its relation to the wheat industry. The instances where that connection appears to exist have already been pointed out. There was a considerable increase in the per capita number of swine in the state as a whole, while sheep declined to some extent and horses again remained stationary. According to the census figures there was a marked and general decline from .49 per capita to .33 per capita, in respect to "other cattle" in the state as a whole, but it is very probable that this decline is to some extent only apparent, and arises in part from a change in the method of classification of cattle in the *Twelfth Census*.[23]

Inspection of the table of prices for wheat shows that the price declined to even a more marked extent than during the previous decade. Reference to the table giving the average cash valuation per acre in different counties shows a marked increase in that valuation. Under these circumstances wheat could not re-

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[20] Compare Monroe, Pierce, Green Lake, and Richland counties.

[21] *e. g.*, Polk County.

[22] *e. g.*, Manitowoc county.

[23] See above, notes 4 and 7. On p. 55 of *Bulletin, U. S. Dept. of Agric., Div. of Stat.* No. 24, *Relations of Population and Food Products, etc.* (1903) appears the following statement:

"The weight of evidence indicates that calves were not counted at the censuses prior to 1900. Calves should therefore be omitted from comparative statements of resources in the different census years." This suggestion has been followed, but seems to be only partially valid as applied to Wisconsin. If "other cows 2 years old and over" be included among dairy cows and excluded from "other cattle," the decline in the latter class appears still more extreme. The statistical evidence of a very considerable decline in the number of "other cattle" during the decade 1889–1899 is corroborated by the general opinion of persons best qualified to speak in that respect.

main in cultivation to any considerable extent, and gave place to more profitable crops and pursuits.

Wheat growing has shown further decline since 1899 according to the statistics furnished by the *Wisconsin Census Report of 1905*, although the year ending June 1, 1905, was unusually unfavorable from an agricultural point of view.[24] The acreage in wheat declined from 555,747 acres in 1899 to 210,010 acres in 1904—a decline of 62 per cent. The total yield declined from 9,005,170 to 2,700,813 or 70 per cent., while the per capita yield for the state as a whole declined from 4.35 bushels to 1.21 bushels, or 72 per cent.

The same sections remained dominant in wheat growing in 1904 as in 1899, but with greatly diminished absolute importance. Buffalo county retained first place both in per capita yield (7.9 bushels) and in yield per square mile of improved land. Kewaunee followed next in order in per capita yield (6.8 bushels) but on account of low yield per square mile of improved land gave precedence to Trempealeau county (5.9 bushels per capita) in degree of specialization. Door, Burnett, and Jackson counties each produced between 4 and 5 bushels per capita; Pepin, Shawano, Pierce, Monroe, and Dodge each produced between 3 and 4 bushels per capita. Eau Claire, Polk, Vernon, Calumet, Dunn, Washington, Green Lake, Oconto, and Crawford each produced between 2 and 3 bushels per capita; the remaining counties of the state all produced less than 2 bushels of wheat per capita in 1904.[25]

What other crops or farm pursuits were instrumental during the five years 1899–1904 in the further displacement of wheat growing? Of the counties that were most important in wheat growing in 1899 those of the western section showed in general

[24] "It may be properly stated that the year ending June 1, 1905, was a very unfortunate year for taking the census. The crops were, on the whole, exceedingly light and the prices low." *Wisconsin Census Report*, 1905, part I, p. viii.

Barley, potatoes and hay are the only important farm crops showing a greater yield in 1904 than in 1899. There was also an increased acreage in respect to each of these three crops. For the state as a whole there was a decline in both acreage and yield in respect to rye, corn and oats. The decline in the acreage of oats was small, amounting to about 5 per cent.

[25] See Table I.

an increased acreage in oats in 1904, while those of the eastern section showed generally a reduced acreage as well as a reduced per capita yield in that crop. The per capita yield of oats in Buffalo, St. Croix, Polk, Pierce, Trempealeau, Pepin, Jackson, and Monroe was 113.0, 122.4, 66.6, 84.2, 112.0, 66.0, 94.2 and 59.8 bushels respectively—an increase in each case. Inspection shows a decline in the potato crop in many of the wheat counties,—Door, Shawano, Monroe, Jackson, Eau Claire, and Brown counties being exceptions. There was a general decline in corn and rye. All of the counties important in wheat growing in 1899 showed a large gain in barley in 1904 except Calumet where there was a reaction from that crop. Notwithstanding the decline in the tobacco crop in the state as a whole,—both in acreage and in the number of pounds produced—most of the western wheat counties showed a large gain in that crop as a partial offset to the loss in wheat.[26]

Both eastern and western sections shared in the general increase in the hay crop—the increase being marked in the eastern counties. This increase in the hay crop was attended by very considerable increase in the number of sheep in the western section, by considerable decline in sheep in the eastern section generally,[27] and by a considerable increase in horses in both sections.[28] Owing to the differences in classification in respect to neat cattle, in the *State Census of 1905* and in the *Twelfth Census of the United States* the movement in respect to other cattle than dairy cows can not be accurately determined. It seems, however, that there was a heavy loss in that respect in all of the eastern wheat growing counties while in most of the western wheat counties "other cattle" either held their own or showed considerable gain. This gain was particularly marked in St. Croix, Monroe, and Vernon counties. All of the counties that had been important in wheat growing in 1899 showed a large increase in the per capita number of milch cows. The western counties

[26] See Table XXII.

[27] The number of sheep declined in the state as a whole.

[28] That is, in "horses and mules" as compared with "horses" in the *Twelfth Census of the United States*. There was a general loss in the number of swine in nearly all parts of the state.

showed the most marked increase.[29] This increase in the number of milch cows represented the growing importance of the various branches of the dairy industry.[30]

It thus appears that various other farm crops and pursuits of which dairying was probably the most important had shared in the further reduction of the wheat area during the period 1899 to 1904. Further, there had been more tendency toward

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[29] The increase in the per capita number of milch cows for the state as a whole was from .48 to .55. In *Bulletin of the Agric. Exper. Stat., Univ. of Wis.* No. 140, (Sept. 1906) p. 17, attention is called to the fact that there was an "extended tier of counties on the western boundary of the state in which the erection of new factories appears to have stopped," though it is acknowledged that "in many cases the number of cows tributary to the creameries is much higher than the average." This lack of factory growth in the case of Pierce, St. Croix, and southern Polk counties is attributed as possibly due to the fact that these counties "have been and still are great grain-raising counties." Though this last statement may be accepted as partially valid, reference to the large per capita increase in the number of milch cows in these three counties and in the other western counties will serve to further emphasize the acknowledged danger in estimating the growth or decline of dairying by the number of dairy factories. The increase in the number of milch cows in the western counties was attended by an increase in the number of gallons of milk produced, such that the amount of milk produced per cow was higher in each of these three counties than in Shawano where "a most phenomenal extension" was noted (p. 15). The comparative figures for these four counties are as follows:

Counties	Per capita 1899	Per capita 1904	Increase	Pounds of Milk per. cow, 1904.
Pierce	.46	.69	.23	4117.4
St. Croix	.50	.71	.21	3936.1
Polk	.70	.94	.24	3280.3
Shawano	.50	.67	.17	3097.5

The slower increase per capita in Shawano county can scarcely be attributed to the large increase in population in that county as improved land increased in that county between 1899 and 1904 while improved land declined in area in the other three counties taken together, for the same period. On the other hand the final product was in general more valuable in the cheese-making east than in the butter-making west, and doubtless required the investment of a larger amount of capital. In several of the eastern counties a large increase in the number of milch cows was partially concealed by the growth of city population, as in Brown and Door counties.

[30]

	1900	1905	Increase
Farm butter	25,000,000 lbs.	34,500,000 lbs.	38%
Factory butter	55,000,000 lbs.	88,500,000 lbs.	60%
Cheese	60,000,000 lbs.	110,000,000 lbs.	83%

(See *Bulletin of the Agric. Exper. Stat., Univ. of Wis.*, No. 140, [Sept. 1906], pp. 6 and 7. Also pp. 5, 7-9. See also map accompanying the same).

It is probable that the *State Census for 1905* affords more liberal results as to the number of dairy cows than does the *Twelfth Census of the United States*.

specialization in the eastern than in the western counties, and that specialization was in the direction of the cheese making industry.[31] The latest phase of development in wheat growing in Wisconsin thus presents no new feature.[32]

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[31] See *Bulletin of the Agric. Exper. Stat., Univ. of Wis.*, No. 140, (Sept. 1906), pp. 10 and 14.

[32] Estimates of acreage and yield for the years 1905-1908, compiled from the Reports of the Wisconsin State Board of Agriculture—supplemented by statements by Mr. John M. True, Secretary, January 12 and 18, 1909—are as follows:

Years	Acreage	Bushels
1905	219,493	3,165,801
1906	213,754	2,813,479
1907	145,643	2,330,288
1908	122,775	2,209,050

Corresponding estimates of the United States Department of Agriculture, compiled from the Year Books, 1905-1907 and from the Crop Reporter, August and October, 1908, are as follows:

Years	Acreage	Bushels
1905	474,233	7,893,381
1906	288,040	4,690,816
1907	210,000	2,955,000
1908	207,000	3,748,000

The marked discrepancy between the figures in the two estimates—especially for the years 1905 and 1906—are due in part to the fact that the state estimates are acknowledgedly conservative, while the federal estimates are probably too liberal.

CHAPTER VI

THE FLOURING INDUSTRY IN WISCONSIN

Reference has already been made to the more important centers of flour manufacture in Wisconsin previous to 1849.[1] According to the *Seventh Census of the United States*, there were 117 flour mills and grist mills in Wisconsin, representing an investment of capital amounting to $1,020,550. These mills consumed $2,651,623 worth of raw material and turned out a product valued at $3,536,293. The chief centers of production were Milwaukee, Janesville,[2] and Watertown.[3]

The three factors determining the localization of the milling industry at this period were superior water power, superior situation in reference to the wheat areas, and superior situation in respect to the centers of population and in respect to markets. The accompanying table compiled from the reports of the board of trade of Milwaukee gives statistics in regard to that city for the years between the census periods,[4] but figures for the remainder of the state are scanty. The flouring industry in Wisconsin, as elsewhere at this period, was dispersed among many small establishments, whose motor power was furnished at first exclusively by water-mills or by wind-mills.

According to the census of 1860, the number of establishments had increased to 374, with an investment of $3,526,869. Raw material to the value of $9,532,510 was consumed and yielded a product worth $11,570,834. The industry had thus more than trebled in importance during the decade. During the early part

[1] See above p. 17.
[2] Neill, *Hist. of Freeborn County, Minnesota*, 456.
[3] See above p. 17.
[4] See Table VII.

of the decade, the receipts of flour at Milwaukee were chiefly via the Milwaukee and Mississippi railroad from the southern part of the state. Later, with the spread of the wheat area into the central and western parts of the state, receipts via the Milwaukee and La Crosse railroad took the lead. The latter railroad also passed through a region in which water powers were more numerous.[5] In 1860 Milwaukee and Rock were the two counties most important in the manufacture of flour. The former produced about 16 per cent. and the latter about 10 per cent. of the total product of the state at that period. Green[6] and Dodge come next in order of importance, while Dane, Fond du Lac, Jefferson, Walworth, and Winnebago were also important. Other counties produced a considerable amount.

During the next decade the industry nearly doubled, while the number of establishments increased to 581,—an increase of about 55 per cent. A tendency toward concentration thus appears. Milwaukee county had increased its production to 20 per cent. of the total for the state. Rock, Walworth, Green, Grant, and Waukesha counties suffered considerable decline in milling,[7] due no doubt in part to the decrease of wheat culture in those counties.[8] Jefferson county more than doubled in amount of capital invested and in value of product, while wheat growing had also increased in importance. In Lafayette and Racine counties, however, milling increased very considerably while wheat growing declined. In Columbia, Dodge, Dane, and Iowa counties, notwithstanding the increased importance of wheat growing, milling decreased not only in proportion to population, but absolutely as well. This decline was slight in Dodge county. In the eastern,[9] central and western parts of the state wheat growing and milling increased together. Winnebago county showed a marked increase in milling and now produced about 8

[5] *Rep. of Milwaukee Chamber of Com.*, for 1858 and 1859.

[6] Monroe was a town of considerable importance in the manufacture of flour and pork at an early date.

[7] The decline was marked in Green county.

[8] Waukesha county, however, remained about stable in wheat culture. See Table III.

[9] The decline in wheat growing in Kewaunee was only temporary. Outagamie county, though increasing in production of wheat, showed a marked decline in milling, if the census figures are trustworthy.

per cent. of the total for the state. In the western part of the state, Chippewa, Eau Claire, Buffalo, and St. Croix showed the largest increase.[10]

It thus appears that in general the same influences were at work determining the localization and growth of the milling industry as in the preceding decade. The increase was most marked in the eastern part of the state, where the three factors of water power, wheat and market were most favorable and operated together to the greatest advantage.

During the decade 1870 to 1880, nearly every portion of Wisconsin shared the prosperity of the milling industry in the northwest generally,[11] which followed the introduction of the "new process" in the manufacture of flour.[12] The "milling-in-transit" privilege[13] gave the smaller centers a relative advantage over Milwaukee, so that the flour product of Milwaukee county dropped to about 15 per cent. of the total in 1880. Winnebago county had increased her production to about 9 per cent. of the total for the state, while Rock county, in spite of the decline in wheat growing, had more than regained the importance of 1860. Jefferson and Green counties barely held their own in absolute importance while Buffalo, Racine, Washington, and Green Lake counties showed an absolute loss since 1860. In the remaining counties of the state, however, the milling industry increased very materially. This increase was particularly marked in the northeastern and northwestern portions of the state, where the same influences as in 1870 combined in a special way to bring

[10] Washington, Green Lake, and La Crosse counties are indeterminate, as no statistics appear for 1859, but were quite important in milling by 1869 and had probably increased in importance during the decade.

[11] Spring wheat flour commanded a premium at once and the flouring industry was stimulated throughout the spring wheat growing region. See quotations in *Rep. of Milwaukee Chamber of Com.*, just previous to 1874 and just following that year; Adams, *Commercial Geography*, 61; *Farm and Factory*, (La Crosse, Wis.) May 11, 1877.

[12] The number of establishments increased to 705, an increase of about 21 per cent. The amount of capital invested, the cost of raw materials used and the value of the product increased from 40 to 50 per cent. While the increase in the industry as a whole was greater than the increase in population, the absolute increase was somewhat less than during the previous decade and the proportional increase much less.

[13] An arrangement by which wheat was stopped at the point in question, manufactured into flour and then moved to its destination at the original rates.

about that result.[14] The southern and south-central portions of the state, generally speaking, reflected the marked decline in wheat growing in those sections by a less rapid increase in flour milling.

The localization of the industry at the close of this decade shows that the wheat area had not yet moved so far outside of the state as to cut many of the former establishments off from a supply of wheat. This situation was soon to be the case, however. The rapidly growing importance of the city of La Crosse in the flouring industry attracted attention, and not a few believed that here lay the future center of that industry in the northwest. The decline of Wisconsin as a wheat producing area, led to a consideration of the possibility of a supply of wheat for milling purposes from the new area farther west. For obtaining this wheat, La Crosse was favorably located. The editor of the *Farm and Factory*[15] quoted, approvingly, a circular issued by the Board of Trade of that city, calling attention to its advantages for the manufacture of flour. It was pointed out that the situation of the city was such as to enable it to control all the primary markets of the wheat region of Minnesota, being the gateway to the east[16] and located on the only direct railroad route between all eastern points and Minnesota. The cheapness of fuel, which was derived from the refuse of its lumber manufactures, was noted, and the additional fact that the Mississippi river would operate to secure favorable railroad rates was referred to.

The rapidity with which the wheat area was moving was, however, underestimated by these prophets. The wheat industry in southern Minnesota was already on the decline. La Crosse continued to increase her output for some years, but Minneapolis was already producing a million barrels of flour, and with the construction of the northern railroads to east and west, began about 1879 to add to this output about 500,000 barrels per year. In

[14] Iowa, Portage, and Sauk counties also showed a marked increase.

[15] May 11, 1877. [From the *La Crosse Daily Democrat*] The *Northwestern Miller* was published by the same parties who published the *Farm and Factory*.

[16] "Three-fourths of all the wheat raised in Minnesota, whether shipped in the berry or as flour, passes through La Crosse on its way to eastern markets."

1879 the offices of the *Northwestern Miller* were removed to Minneapolis,[17] on the grounds of the preëminence of that city in the milling industry.

It is unfortunate that after 1880 the federal census fails to give statistics for the milling industry by counties. For the state as a whole, however, there was a loss in every respect except in the amount of capital invested,—the loss being marked in respect to the number of establishments.[18] This decline was parallel with the general depression in the milling industry of the northwest that set in following the expansion due to the introduction of the patent process.[19]

As the wheat area moved still farther to the north and west and still greater dependence was had upon the railroads to supply the necessary wheat, the smaller centers of production found themselves unable to compete with the more important centers, especially as the railroads either chose to discriminate in favor of the latter or were compelled to do so. Milwaukee, on the other hand, showed a great expansion in the flouring industry during the decade.

From the figures of the *State Census for 1885*, the most important centers of the milling industry can be pointed out, though the figures bear such evidence of untrustworthiness that they are worthless so far as absolute amounts are concerned.[20] In 1885, outside of Milwaukee and La Crosse counties, the counties adjacent to the Fox River and Lake Winnebago were most important. Here the cultivation of wheat still persisted to a considerable extent. A considerable decline is indicated in the northwestern counties, though wheat growing retained something of its former importance here also. Dane, Jefferson, and Rock counties still manufactured considerable quantities of flour, though showing a decline since 1880. In general, it may be said that by 1885 the distribution of wheat growing within the state

[17] See the issue of March 7, 1879.

[18] Note the continued tendency toward concentration.

[19] See *Northwestern Miller* for Feb. 1, and Nov. 28, 1884.

[20] According to the figures of the *State Census for 1885*, the milling industry in Wisconsin fell off nearly one-half in value of product as compared with the *U. S. Census* figures for 1880. This is plainly improbable. In the *State Census for 1895*, the columns are not correctly footed up, the totals being almost twice as large as the figures in the columns warrant.

had ceased to exercise any considerable influence upon the localization of the milling industry. The *State Census for 1895* shows the great importance of Douglas county in the manufacture of flour and grist mill products.[21] The increase had been most striking there during the decade, but was in no way related to the wheat industry in Wisconsin. A decline in the importance of La Crosse county is indicated. By 1900, according to the *Twelfth Census,* the milling industry in the state as a whole had nearly recovered what it had lost during the decade 1880 to 1890. The number of establishments had increased to 717, or 12 more than in 1880. This increase in the number of establishments was probably due as in other parts of the country, to the establishment of many small mills for the grinding of other grist mill products than flour.

The city of Milwaukee, as a flouring center, merits special attention on account of its importance. In 1854 there were five flour mills in Milwaukee, with a total output of 130,000 barrels. The hydraulic power of the river was used exclusively, at that time,[22] but two years later one of the largest mills was equipped with new machinery and an "immense steam engine."[23] By 1860 the number of flour mills in the city had increased to fourteen and the individual mills had succeeded in establishing a market for their flour in New York and New England.[24] The output in 1862 was reduced by the burning of two of the mills of the city and continued low until 1866, on account of the fact that wheat was worth relatively more than flour.[25] In 1866 there began a rapid increase in the ouput, so that for a time Milwaukee produced more flour than any other western city.[26] The abrogation of the reciprocity treaty with Canada which excluded Cana-

[21] According to the *State Census of 1885*, there were 36,000 barrels of flour, worth $252,000, manufactured in Douglas county. These figures had increased in 1895 to 3,019,200 barrels, worth $9,209,140. The city of Superior includes almost the whole of the industry in the county.

[22] See *Rep. of Board of Trade* for 1854.

[23] *Ibid.*, for 1856.

[24] *Rep. of Chamber of Com.* for 1860.

[25] This was brought about in part by the relatively higher freights on flour as compared with wheat, and in part by the decline in foreign demand. See *Reps. of Chamber of Com.* for 1862-65.

[26] *Ibid.*, for 1866.

dian flour from our markets was said to have been one of the causes of this increase, but the failure of the wheat crop in other parts of the country was probably a more important cause.[27] At any rate the increased demand resulted in more mills and greater capacity, and ultimately in overproduction of flour and in depression in Milwaukee as elsewhere. While the output increased somewhat in the years 1873–1875, there was another decline in production during the following three years.[28] So far from Milwaukee being the most important center of flour production in the west, St. Louis produced nearly 1,000,000 barrels in excess of that city in 1871.[29] Up to this time the precedence attaching to St. Louis represented in part the superiority of winter wheat flour over spring wheat flour. By 1874, however, the "new process" had been introduced into all the larger mills in Milwaukee, and a largely increased output might have been expected in consequence of the preference for spring wheat flour. That the increased output was neither large nor permanent was due to several causes. We have seen that Milwaukee county, during the decade 1870–1880, declined relatively to the total production of the state, and it was pointed out that the "milling-in-transit" system worked to the advantage of the smaller producing centers and perhaps also of Minneapolis.[30] Another probable reason for the small increase in output of flour in Milwaukee during the decade was the deterioration in the quality of the wheat after about 1865. Wisconsin wheat was noted for its high quality in earlier days, but as the wheat industry declined the quality of wheat depreciated.[31] A still further cause for the small increase in output was that during the time of Milwaukee's preëminence as a wheat market much speculative business was done and while Milwaukee millers had a large stock of wheat to select from they came into competition with the demands of many other buyers in various parts of the country and

[27] *Ibid.*

[28] According to the *Rep. of Chamber of Com.* for 1876, the reduction in the output of flour that year was due to the closing of two mills for repairs.

[29] *Ibid.*, for 1871.

[30] See above, note 13. See also *Report of Milwaukee Chamber of Com.* for 1886.

[31] *Rep. of Milwaukee Chamber of Com.* for 1868. See above p. 59.

were forced to pay high prices for their wheat.[32] The constant fluctuations[33] in the price of wheat in an important speculative market constitute another serious drawback, and it is significant that Milwaukee mills did not begin to increase their output to any marked extent until after that city had become unimportant as a wheat market.[34] It appears further that steam motor power had been found more expensive than the water power of the smaller milling centers.[35]

In 1879 the foreign demand for bread-stuffs again came to the rescue and the output of flour increased to a considerable extent. Lower prices for wheat probably stimulated the foreign demand in turn. Notwithstanding the competition with Minneapolis and Duluth for the necessary wheat,[36] the output of flour in the Milwaukee mills increased with more or less regularity until 1893. During the four years 1889–1892, the increase amounted to nearly 50 per cent. In consequence of the depression following the financial disturbances of 1893 the flour output fell off over 260,000 barrels in that year. Insufficient receipts of wheat in the following year forced the mills of Milwaukee to draw upon Duluth and Chicago for supplies to meet the deficiency. The mills of Minneapolis experiencing a similar shortage, there resulted competition to an unusual degree for the stock of wheat in territory more or less tributary to both. The greater importance of the industry at Minneapolis, together with the more favorable situation of that city with respect to competing lines of transportation, enabled her millers to wrest concessions from the railroads in the struggle for possession of this wheat. This was the more easily accomplished at a time when the railroads were struggling desperately for traffic at any

[32] See *Reports* for 1862–1865.

[33] A frequent complaint among millers.

[34] In like manner Chicago has never become greatly important as a milling center, while Minneapolis has never been important as a speculative wheat market.

[35] *Rep. of Milwaukee Chamber of Com.* for 1869.

[36] "The crop of spring wheat in 1881 proved largely deficient in quantity, while the production of flour near the sources of supply, probably reached its highest capacity in that year, almost absorbing the whole crop." *Rep. of Milwaukee Chamber of Com.* for 1882.

rate however low.[37] To secure a supply of wheat on equal terms the Milwaukee Chamber of Commerce went before the Interstate Commerce Commission with their complaint. In 1897, a favorable decision was secured but discrimination went on as before. Accordingly further proceedings were instituted in 1898, but with little avail, as the commission declared itself without power to remedy the situation, while one of the offending roads asserted its inability to stop the discrimination.[38]

In spite of the improvements in the methods and in the cost of handling grain and flour, and in spite of the improvements in transportation directly across Lake Michigan, the disadvantage which Milwaukee suffers in being at an ever increasing distance from the sources for the supply of wheat, with the added disadvantage in rates which this situation tends to bring about, works both against a restoration of her former commercial importance and the growth of her milling interests. The high water mark of 1892 has never since been reached. The output in 1904 amounted to 1,320,611 barrels.[39]

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[37] A comparison of the increase of the flour output of Minneapolis and Milwaukee is made in the *Rep. of Milwaukee Chamber of Com.* for 1894, and the more rapid growth of the former city in that respect is said to be wholly due to the inequitable differences in rates on wheat to Milwaukee and to Minneapolis.

[38] See *Reps. of Milwaukee Chamber of Com.* for 1894–98. See also *Report of the Interstate Commerce Commission* for 1897, pp. 23–4; *Ibid.*, for 1898, pp. 24, 33–4; for 1900, pp. 212–13.

[39] *Rep. of Chamber of Com.* for 1904.

CHAPTER VII

MILWAUKEE AS A WHEAT MARKET

The development of Milwaukee as a wheat market was closely related to the growth of the wheat growing industry within the state. The same rapid rise to even greater relative importance and the same quick decline to comparative unimportance is to be noted in the former as in the latter case.[1] However, while the opening up of the new and cheap wheat lands to the west and north subjected the wheat growers of Wisconsin to ruinous competition, on the other hand, every mile of railroad that was pushed out into the region west of the Mississippi river and that continued tributary to Milwaukee contributed to the importance of that city as a wheat market. But just as the farmers of Wisconsin discovered that they could not control the railroads of the state to their own interest, so Milwaukee was to see the railroads which her business men had projected and which had ministered to her growth and prosperity in her earlier history, contribute later, under the influence of various economic causes, to the development of her rivals. Her merchants were to see the city sink from the position of a great railway terminus, with thousands of miles of tributary lines, to the position of a way-station, through which wheat and flour were billed to other markets. Her Exchange was destined to sink from being the business center of the greatest primary wheat market in the world to the position of adjunct to the commercial organization of her great rival at the foot of the lake. Nor was it in the power of her citizens to avert this consequence, though by no means lacking in enterprise or resourcefulness. It was the resistless oper-

[1] Compare the yearly receipts of wheat at Milwaukee with the yearly production of wheat within the state of Wisconsin. See Tables IV and VIII.

ation of the economic causes that set up and pull down cities, that swiftly, in this case, and surely worked out their results.

In the spring of 1841 the first shipment of wheat was made from Milwaukee. The amount was 4,000 bushels and the destination Canada.[2] There had been much competition between Milwaukee and Chicago for the wheat of southern Wisconsin and northern Illinois and it was the wheat of this region that first gave Milwaukee her reputation as a wheat market.[3] When the Galena and Chicago Union railroad was built, Chicago succeeded in diverting the grain to that point. The Beloit and Mississippi railroad was projected with the view of bringing this grain back to Milwaukee. The wheat growers of the southern part of the state were threatening to establish railroad connections with Chicago, and it was felt that something must be done if their trade was to be held for Wisconsin markets.[4]

We are thus early introduced to the competition of markets which played so important a part in the development of railroads within the state. During the year 1851 the Milwaukee and Waukesha railroad was built to Eagle Center and by 1857 to Prairie du Chien. In 1858, La Crosse was reached and Milwaukee was put in a favorable position for the grain trade of the region west of the Mississippi river.[5] In the meantime, the whole southeastern portion of the state had been covered with a network of railroads tributary to that city, thus insuring her pre-

[2] *Rep. of Chamber of Com.* for 1858.

[3] *Ibid.*, for 1856.

[4] That Milwaukee had no very great lead in commerce over some of the other lake ports in the state in 1850 is shown by the following table, taken from the *American Railroad Journal*, 1851, p. 64:

Ports.	Total Exports and Imports.	Imports alone.
M'lwaukee	5,927,119	3,828,650
Racine	2,108,700	1,452,750
Southport	1,213,399	629,791
Sheboygan	583,991	517,800
Port Washington	326,576	278,311
Green Bay	232,367	151,537
Manitowoc	62,848	49,129

[5] Milwaukee had suffered damaging competition from Chicago at La Crosse previous to the completion of the railroad to that point. *Rep. of Chamber of Com.* for 1858.

ëminence as the commercial emporium of the state.[6] Attention was early called to the fact that Milwaukee enjoyed a differential of 156 miles from Prairie du Chien as compared with Chicago[7] and it was pointed out that on account of the depth of the lake, uninterrupted navigation existed throughout the year across to Grand Haven, Michigan.[8] It was thus claimed that with demonstrable superiority over Chicago in respect to transportation by both land and water, Milwaukee could successfully compete for the wheat of Iowa and Minnesota.

In 1855, some wheat came north from Illinois, via Beloit and Janesville, to Milwaukee.[9] Whitewater was in 1856 the market for thirty miles around—grain having come from as far as McHenry county, Illinois. The wheat was stored there until it could be shipped east at the opening of navigation.[10] In 1858, of 2,317,000 bushels of wheat transported on the Milwaukee and Mississippi railroad, only 350 bushels went to Chicago.[11] In 1859 the same road brought over 450,000 bushels of wheat and 14,674 barrels of flour from Prairie du Chien to Milwaukee. The larger portion of this was delivered to the road by the steam ferry boats and represented the trade of the trans-Mississippi region.[12]

Chicago had not been idle, however. The Chicago, St. Paul and Fond du Lac railroad was completed throughout, from Cary, Illinois, to Oshkosh in 1859 and became the Chicago and Northwestern railroad in that year. Much difficulty was experienced in

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[6] See map of railroads in Wisconsin for the decade 1850-1860 (Figure 9). See also above p. 42.

[7] *Rep. of Board of Trade* for 1855.

[8] *Ibid.*, for 1856.

[9] *Rep. of Mil. and Miss. R. R. Co.* for 1855.

[10] *Governor's Message and Accompanying Documents*, 1857, 2: 427-34.

[11] "Nineteen-twentieths of the business of the country tributary to the road have been done with Milwaukee." *Rep. of Mil. and Miss. R. R. Co.* for 1858. It was asserted, however, that the road had been forced on account of financial reasons to discriminate in favor of Chicago. *Rep. of Milwaukee Chamber of Com.* for 1858.

The growing importance of Milwaukee as a wheat market was due in part to the superiority of the wheat marketed there. The wheat of Illinois had deteriorated while that of Wisconsin was of prime quality. Wisconsin wheat was said to have brought from 8 cts. to 10 cts. more per bushel than Illinois wheat. See *Rep. of Board of Trade* for 1856. See also *Rep. of Milwaukee Chamber of Com.* for 1858.

[12] *Rep. of Mil. and Miss. R. R. Co.* for 1859.

preventing this road from diverting the wheat from Milwaukee to Chicago.[13] In 1855 the Green Bay, Milwaukee and Chicago railroad was built from Milwaukee to the Illinois state line to meet a road at that point built from Chicago. This road, while at first tributary to Milwaukee, was later, in connection with the trunk lines east from Chicago, a formidable competitor of the lake lines, and in this way served to bring about the downfall of Milwaukee's preëminence as a wheat market.

Milwaukee profited chiefly, however, during the first decade by the great development of the wheat area within the state itself. Even in 1858, out of total receipts of 4,876,117 bushels, 750,000 bushels were brought in by team.[14] Minnesota did not begin to export wheat until 1859, while exports from Iowa, via Milwaukee, had not yet attained the importance of later years.

Racine, too, continued to be a market not to be despised. In 1858 there were 913,376 bushels of wheat and 10,136 barrels of flour shipped from that point as compared with exports of 3,994,213 bushels of wheat and 298,129 barrels of flour from Milwaukee for the same year.[15]

Milwaukee quickly recovered from the effects of the panic of 1857 and the next year the Chamber of Commerce was organized. In the same year "grades of wheat" were first established and the first warehouse and elevator was erected at the depot of the La Crosse railroad.[16] In 1849 out of total exports from Milwaukee amounting in value to $2,098,469.36, shipments of wheat and flour constituted $1,949,731.29.[17] By 1859 notwithstanding the growth in other branches of commerce, it could still be said that the "chief feature in the commerce of Milwaukee was the large and rapidly increasing trade in grain."[18] In 1860 one-third of the total receipts of wheat and flour at Milwaukee came from Illinois, Iowa, and Minnesota, two-thirds of which (about 2,400,000 bushels) came from the latter two states,

[13] "Chicago . . . put forth every effort fair and unfair to divert the trade from this city." *Rep. of Milwaukee Chamber of Com.* for 1858.

[14] *Ibid.*

[15] *Ibid.*

[16] *Ibid.*

[17] *Am. R. R. Journal*, 1850, p. 344.

[18] *Rep. of Chamber of Com.* for 1859.

constituting the "entire grain trade of the upper Mississippi,"[19] and the prediction was soon made that Chicago could not long compete with Milwaukee as a market for wheat.[20] The interruption of navigation on the Mississippi river by the breaking out of the Civil War also operated to the advantage of Milwaukee. Owing to the competition between the Detroit and Milwaukee, and the Lake Shore and Michigan Southern railroads, Milwaukee at this time enjoyed the same all-rail rates east as Chicago. This gave Milwaukee a further advantage for the time being. The production of wheat increased largely in Minnesota and in northwestern Wisconsin, territory that was naturally tributary to Milwaukee,[21] so that by 1862 receipts of wheat at Milwaukee were for the first time larger than those of Chicago, and the former became the "greatest primary wheat market in the world."[22]

Waukesha county increased her production of wheat and 1,086,716 bushels of wheat were brought into Milwaukee by team in 1862. On account of the ravages of the chinch bug and the consequent short crop in Wisconsin in 1864, receipts in that year fell off considerably, but recovered to a considerable extent in 1865. Nearly one-half of the receipts of the latter year came from Minnesota.[23] In 1866, a noteworthy feature was the increasing proportion of flour and wheat carried via Chicago by the all-rail lines, which were becoming more and more able to compete with the lake carriers. The latter method of transportation involved extra loading at Grand Haven. As it had always been recognized that Milwaukee's supremacy depended upon the ability of the lake carriers to compete successfully with the all-rail lines, the possibility of the future decline of that city as a wheat market began to be considered by her own citizens, and the incoming president of the Chamber of Commerce in 1870 pointed out the fact that it was impossible to longer rely upon commerce alone, and advocated the establish-

[19] *Ibid.*, for 1860.
[20] *Ibid.*, for 1861.
[21] See wheat charts for 1859 and 1869 (Figures 2 and 3).
[22] *Rep. of Chamber of Com.* for 1862.
[23] *Ibid.*, for 1865.

ment of manufactures. The construction of the Northern Pacific railroad, and the growth of the milling industry at Minneapolis and of the wheat trade of the city of Duluth were undoubtedly further significant facts of which the far-seeing took note. As if to forestall the competition of these rising centers of the flour and grain trade, the Report for 1871 calls attention to the preëminent facilities and other advantages of Milwaukee for the grain trade, and notes that steps had been taken to guard against unfavorable discrimination by the railroads. In response to the general demand for cheaper transportation, the Chamber of Commerce lent its aid to that cause and succeeded in securing a considerable reduction of tolls and other charges.

As a result of the large wheat crops of 1872 and 1873, receipts of wheat at Milwaukee reached the high total of 28,457,937 bushels,* while the receipts for the next two years were almost as large. Naturally there was much complaint of lack of storage facilities, of which the railroads were said to have a monopoly. A further result of the increased receipts was the stimulus given to speculative dealing in wheat and in 1875 transactions "on change" amounted to 197,000,000 bushels.[24] Receipts in 1876 fell off one-third as a result of deficiency in the wheat crop that year. The railroads with their greatly increased mileage entered into a life and death struggle with each other and with the lake carriers for a share of the diminished traffic. All-rail rates declined to the basis of transportation by water, and the winter movement of grain from the interior was greatly enlarged.[25] To a considerable extent this grain merely passed through or around Milwaukee and did not enter into the real trade of that city. Renewed apprehension was excited as to the effect of this movement upon the business of the Exchange.[26] When receipts increased in 1878 to the extent of nearly two million bushels this apprehension was allayed and Vice-President Britt expressed himself as no believer in the

[24] *Reps. of Chamber of Com.* for 1872-75.
[25] *Ibid.*, for 1876.
[26] See address of Vice-President N. P. McLaren, *Rep.* for 1877.
* *i. e.*, in 1873.

idea that "we have reached the climax of our grain trade."[27] Such proved to be the case, however, as Milwaukee never again equalled the receipts of wheat for the year 1873. The supremacy had already passed from that city, as the receipts of wheat at Chicago in 1878 were nearly 8,000,000 bushels in excess of the receipts at Milwaukee the same year. The shortage was said to be due to the deficiency in the spring wheat crop, and a similar assertion was made the following year. As the federal census showed a wheat crop in Wisconsin in 1879 but little below the maximum this must be accepted as but a partial explanation. Minneapolis was, however, becoming more and more a competitor of Milwaukee for the wheat in territory common to both, while examination of the wheat chart for 1879 shows the great decline in the amount of wheat being produced in the part of the state directly tributary to Milwaukee.[28] Much of the wheat that formerly came to Milwaukee, now came as flour, and even then came in large part via Milwaukee on through bills of lading and did not enter into the business "on change" there at all.[29] Receipts declined still further in 1881 and, the business of the city continuing prosperous, it was asserted that the prosperity of the city and of the northwest generally was no longer wholly dependent upon the profitable cultivation of wheat.[30] The city was indeed becoming more a center for manufactures and less a merely commercial center. The manufacture of flour in the city was just entering upon the great expansion which was to continue for a decade or more.[31] Less and less wheat was exported and an increasing proportion was

[27] *Rep.* for 1878, p. 15. "The fact is clearly illustrated that the minimum cost of rail-transportation will afford a good margin for profit in favor of the water rate. Herein we find the chief element that has in the past contributed to make a great commercial city of Milwaukee, as well as the best assurance of her future prosperity." *Ibid.*, p. 18.

The significance of this lies in the fact that the competition of the railroads had forced the building of larger and more economical vessels on the lake, and in consequence the lake carriers were more nearly holding their own again.

[28] Minneapolis had produced 1,551,798 barrels of flour in 1879, while Milwaukee produced but 752,133 barrels during the same year.

[29] *Reps. of Chamber of Com.* for 1877-80.

[30] *Ibid.*, for 1881.

[31] See Table VII showing the amount of flour manufactured in Milwaukee.

ground into flour.[32] Parallel with the decline in receipts, there occurred a great decline in speculative dealings in wheat. This was by no means a disadvantage to the millers of the city.

The receipts of wheat at Chicago were now nearly three times as large as those of Milwaukee, while by 1883 Duluth almost equalled the latter city in this respect. Increased shipments from 1884 to 1887 were in large part merely through shipments and accordingly were of minor significance. This is brought out clearly by the drop in receipts in 1888 when the railroads discontinued reporting through shipments. By 1886, it was acknowledged that Milwaukee was no longer important as a wheat market.[33] Reductions in rates of storage had been made in 1885 and further reductions were made in 1887, but without avail. Complaint was also made that the railroads failed to operate the elevators so as to best serve the interests of the city. The elevators of the city were becoming less and less public in their character,—a circumstance quite in keeping with the decline of Milwaukee as a speculative wheat market. President Wall ascribed the decline of Milwaukee as a primary grain market to the decline in the trading in futures and urged the restoration of future options.[34] This was mistaking effect for cause. The recommendation was carried out, but receipts continued to steadily decline during the following three years.

Reference has been made in dealing with the flour industry in Wisconsin to the discriminations on wheat in favor of Minneapolis and Duluth as against Milwaukee. These discriminations also existed against Chicago. As a result, the commercial organizations of the latter two cities, formerly rivals, now drew closer together and made common cause in their struggle for more equitable treatment by the railroads.[35] It was suggested that Chicago make the "receipts of Milwaukee grain elevators that comply with the regulations of her Board of Trade as to

[32] Only 2,193,539 bushels were exported in 1882, while 6,059,290 bushels were used for local consumption and manufacture.

[33] *Rep. of Chamber of Com.* for 1886.

[34] *Rep.* for 1900.

[35] "The fact that rail freights on grain are relatively lower to Lake Superior than to Lake Michigan is the cause of the decline of Milwaukee as a shipping center. Chicago faces the same proposition." *Rep.* for 1903.

inspection and storage deliverable on contracts in the Chicago market."[36] In 1904, there was the usual complaint, however, of unfair discrimination in rates, and the grain trade was said not to be in a satisfactory condition.

In order to avoid the expense of unloading and reloading cars for shipment directly across Lake Michigan, and to provide for shipment during the winter season, in competition with the all-rail routes, a system of car ferries was devised whereby a train of cars is transported bodily across the lake. This is a return to the old theory that the commercial importance of the city depends upon the movement of traffic directly across Lake Michigan.[37] The successful carrying out of the plan is asserted.[38] It remains to be seen how effective this scheme will be in restoring the former importance of the trade in wheat. The indications are that the time is past when such a plan could prove effective. The present trend is in favor of the northern markets in the spring wheat region, and of the markets south and west of Chicago in the winter wheat region. The same causes that brought about the decline of Milwaukee as a wheat market are in operation for the accomplishing of the same result for Chicago.[39] Increasing distance from the centers of wheat production, the increasing effectiveness of transportation by rail as compared with transportation by water, and the more favorable rates which the increasing importance of other markets enables them to secure, all combine to work against the wheat trade of both Milwaukee and Chicago.[40]

[36] *Ibid.*

[37] See *Rep.* for 1891 for other improvements in transfer facilities.

[38] *Ibid.*, for 1905.

[39] Witness the constant complaint at Chicago of unfavorable conditions in the grain trade, and the recurring disputes between the Board of Trade and the railroads as to differentials.

[40] "It has been the unchangeable rule, where it was possible, that the grain crop of the grain belt should seek the nearest and therefore the cheapest route to market from the nearest inland lake or other water point. Aided by their superior advantages in this respect, Chicago and Milwaukee became the natural eastern terminals of the first railroads into this territory, and as naturally became the primary grain markets. . . . Changes have quite naturally occurred, however, and the growth of railroads, of cities, lake ports, banks, local mills and elevators, and other facilities which tend to disturb and shift the ordinary paths of commerce have diverted much of the grain trade of Chicago to other places more advantageously situated as to producer and consumer." *Rep. Ind. Com.* (1900), 4: 404–5.

CHAPTER VIII

THE GOVERNMENT LAND POLICY AND ITS RELATION TO THE WHEAT INDUSTRY IN WISCONSIN

It is of course impossible in this connection to undertake any complete discussion of the public land policy. The attempt is made to merely point out the part it played in the development of the wheat industry in Wisconsin and to pass judgment from that point of view.

The question assumes two aspects: first, cheap lands and the pioneer settlers; and second, the land grant system to the railroads. Though these two phases of the public land policy were in part antagonistic,[1] ultimately the effect in each case was to stimulate the production of wheat. It would be difficult to find any great amount of opposition in Wisconsin in early days to the preemption and homestead laws. The policy of cheap lands met with universal favor. Even those who inveighed against the policy of adding acre to acre until the settler was land poor had no word of criticism for the public land policy which made that course possible. The careless and wasteful methods of cultivation did not go unrebuked; but no one pointed out that land ought to be made more costly because people are naturally wasteful of that which costs little. The part played by the factor of cheap land in the excessive and harmful extent to which wheat culture was carried was set forth plainly by more than one thoughtful person; but no one seriously thought of taking the position that the government ought to make it

[1] Sanborn, *Congressional Grants of Land in Aid of Railroads. Bulletin of the Univ. of Wis.*, No. 30, pp. 31, 45–7. Considerable opposition developed in Wisconsin at first to the land grant system.

more difficult to obtain land.[2] Land was desirable property to own and to get it as cheaply as possible was, like any other bargain, to be desired. The attitude of the people of Wisconsin toward cheap land at the beginning of the wheat period and for a number of years thereafter was the traditional attitude of the frontier—the attitude of the newer western states as opposed to that of the older eastern states.[3] It was not until the farmers of Wisconsin themselves began to suffer in their turn from the competition of the cheaper and more fertile lands in the West that opposition developed to the policy of cheap lands.[4] An insatiable land hunger prevented them from realizing the injurious effects of cheap land and extensive cultivation upon their own agriculture directly. A half century before wheat growing became important in Wisconsin, the close connection between cheap land, the culture of wheat, and bad methods of agriculture were set forth in reference to New York:[5] "New York is at least half a century behind her neighbors in New England, New Jersey and Pennsylvania in point of improvement in agriculture and manufactures. Among other reasons for this deficiency, that of want of enterprise in the inhabitants is not the least. Indeed their local advantages have been such as that they have grown rich without enterprise. Besides lands have hitherto been cheap and farms of course large, and it requires much less ingenuity to raise 1,000 bushels of wheat upon

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[2] See p. 26, however, in reference to the land limitation movement in Wisconsin.

[3] The opposition of the older eastern states to a liberal land policy and the ardent advocacy of the same policy by the frontier states is a commonplace of American history. "The governmeot of this country could not advance the interest of the state more effectually than to hold out still greater inducements to foreigners and others living in distant states, by giving all the disposable land in the state, free to actual settlers, charging only the bare expense of the survey and transfer." Gregory, *Industrial Resources of Wis.*, p. 12. See also the *Mineral Point Democrat*, June 6, 1845, quoting from the *Washington Union*. See also Sanborn, *Congressional Grants of Land, etc.*, pp. 12, 17, 20, 27, 35, 38 ff. Compare the present hostile attitude in the West toward a more strict enforcement of our already liberal laws governing the disposal of the public domain.

[4] *Trans. of State Agric. Soc.*, 1873-74, pp. 109, 429-31. See below, notes 41 and 43. See *Farmers' Inst.* (Wis.) *Bulletin* No. 2, p. 181.

[5] Jedediah Morse, *American Geography*, [Elizabethtown, (N. J.) 1789,] p. 261. Compare Pat. Office Rep. *Agriculture*, 1858, pp. 213-20, article by Gustavus De Neveu, of Fond du Lac, Wis.

60 acres of land than to raise the same quantity upon 30 acres. So long, therefore, as the farmer in New York can have 60 acres of land to raise 1,000 bushels of wheat, he will never trouble himself to find out how he can raise the same quantity upon half the land. It is population alone that stamps a value upon lands and lays a foundation for high improvements in agriculture."

This description is characteristic of specialization in wheat growing on the frontier throughout the movement of the wheat area across the country from east to west, with the reservation that it describes an area in which the stage of serious soil exhaustion had not yet been reached. From an early period in the history of wheat growing within the present boundaries of the United States,[6] the chief features in the early stages have been cheap, fertile land, sparse population, scanty capital, and large yields with the most primitive methods of cultivation. Then, later, with successive cropping to wheat, came soil exhaustion, declining yield,[7] the necessity of more expensive methods of cultivation, higher land values consequent to an increasing population and to the improvements necessitated by an advancing standard of living,[8] resulting ultimately in wheat growing becoming unprofitable and being discontinued in part at least, and being replaced by other crops and farm pursuits less costly of the increasingly expensive factor, land, and more dependent upon the application of the relatively cheaper factors, labor and capital.[9] Wheat growing on the frontier not only requires a limited amount of labor and capital, but it requires only labor of a low degree of skill and capital of minimum efficiency.[10] The all important factor is fertile land adapted

[6] "It [wheat] was introduced into the Elizabeth islands of Massachusetts in 1602, and in 1611 into Virginia. In 1718 it was brought into the valley of the Mississippi, and in 1746 flour was first shipped from the Wabash river to New Orleans." *Rep. of Com. of Agric.* (U. S.) for 1862, p. 66.

[7] "The English colonies on the Pacific, where land is cheap, follow the exhaustive practice of the United States, rather than the restorative system of the mother country, and the result is shown in a yield of cereals not exceeding our own rate of production." *Rep. of Com. of Agric.* (U. S.) for 1868, p. 19.

[8] See below, note 42.

[9] See *Rep. of Com. of Agric.* (U. S.) for 1868, p. 18.

[10] See below p. 170, note 42.

to its culture, and since it is a grain directly used for human subsistence and thus a cash crop, and since specialization in its culture implies a market and thus a sensitive relation to the phenomena of price, the value of the land becomes a factor of prime importance and the growing of wheat on cheap, fertile lands becomes a pursuit of extraordinary competitive strength not only in relation to other pursuits less adapted to that environment, but also in relation to wheat growing itself in a more advanced agriculture. In addition to other peculiarities and characteristics already pointed out which make wheat growing preëminently a frontier crop,[11] it may be worth while to emphasize more particularly a circumstance already noted,[12] which has increased the adaptability of wheat growing to cheap fertile land in the United States, viz: that the early wheat farmer was half speculator. He looked largely to a rise in the value of land for his profit and expected to dispose of his land when that rise in value came. In the meantime, the growing of wheat was not

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[11] See above p. 23 ff. As compared with other grains, wheat has a high specific value, a low degree of perishability and may be handled with a high degree of facility both by hand and by machinery. It thus has an advantage over competing crops wherever the factor of transportation plays an important part as is true on the frontier. Further it is directly available for human consumption while other grains are in general incidental to the live stock industry and are thus available for human consumption only indirectly and through the agency of a more or less prolonged round of operations involving the intervention of considerable amounts of labor and capital, which are proverbially scarce on the frontier.

There was said to have been no market for oats or barley in Grant county in 1852 (See Pat. Office Rep., *Agriculture,* 1852-53, p. 327 ff.) Wheat was said to have been the principal article raised in Fond du Lac county in 1854 for export because other grains would hardly bear transportation to eastern markets. (*Ibid.*, 1854, p. 148 ff. See also Adams, *Commercial Geography,* 59, 60, 63.)

"Wheat is a convenient pioneer crop, and particularly spring wheat. It can be put into all ground one can have ready and he trusts to his opportunities in a later month to harvest." *Bulletin U. S. Dept. of Agric. Div. of Stat.*, No. 24. (Blodgett): *Relations of population and food products in the United States,* (1903) p. 32.

[12] See above p. 40 ff. Ritchie, *Industrial Resources of Wis.*, 172; see *Trans. of State Agric. Soc.*, 1886, p. 226, for the statement that of the two great sources of profit in farming (1) rise in the value of land and (2) profit on the production of farm crops,—the first had thus far been the chief source. This is probably a little over stated, however; see *Rep. of Ind. Com.* for 1900, **10**: 789-90, for similar statement in reference to the early farmers of Dakota; see Register's Report. State Land Office, Oshkosh, Jan. 2, 1852. There was an increase of 100 per cent. in the value of farm lands in the surveyed district, in Minnesota, from 1850 to 1860.—*Rep. of Com. of Agric.* (U. S.) for 1867, p. 108.

only often profitable in itself, but it involved the minimum expenditure for permanent improvements. For this anticipated rise in land values and consequent speculation, the low price at which the public lands were disposed of, afforded abundant opportunity.

In 1790, the wheat country of the United States lay in Virginia, Maryland, Delaware, Pennsylvania, New Jersey, New York, and the westernmost parts of Connecticut, of the two Carolinas and perhaps of Georgia for home consumption.[13] Captain Williamson[14] stated a few years later that it had been found by repeated experience that when wheat was about one dollar per bushel, an acre of ground taken from a state of nature and well timbered would require with great economy fourteen dollars per acre to put into a crop of wheat or rye, including every expense. Forty acres of such ground near Geneva, N. Y., was depended upon to yield at least 1,000 bushels of wheat,[15] and after deducting two-tenths or 200 bushels for reaping and threshing, a balance of 800 bushels was left to defray the expense and "as a profit for the value of the land used." The land was left in complete order for a second crop without further expense than the "trifling one of plowing and sowing." Thus, notwithstanding the expense of clearing in a "well timbered" region, the cultivation of wheat was found to return a high profit the first year.[16] This was possible because of the minimum outlay for the cost of the land. Even in 1804, the price of the best unimproved lands in the Genessee country was commonly from $2 to $4 per acre, while a farm of 100 acres with 20 or 30 acres improved and having a house and barn sold for from $6 to $20 per acre.[17] Methods of cultivation, as might be

[13] Coxe, Tenche, *A View of the United States*, Dublin, 1795, pp. 73–4.

[14] *Documentary History of New York*, **2**: 667 (1850).

[15] The yield of wheat in the Genessee country about 1797 amounted to from 25 to 30 bushels per acre.—*Ibid.*

[16] Attention has already been called to the extraordinary spread of the wheat area over the non-forested part of Wisconsin, and its slower conquest of the wooded portions. Much of Wisconsin was thus more favorable for frontier wheat growing than the famous wheat country of western New York. See above pp. 39–40.

[17] *Doc. Hist. of N. Y.*, **2**: 687.

expected, were far from being thorough.[18] DeWitt Clinton in 1810 described an estate of 2,400 acres located eight miles from Geneva, where 8 acres produced 50 bushels of wheat each, while the average yield of that section was said to have been 30 bushels per acre, and the wheat the best produced in the state.[19] Under similar conditions, the "internal lands" on the large rivers of New Hampshire were raising from 40 to 50 bushels of wheat per acre about 1820,[20] but in 1860 New England produced only eleven quarts of wheat per capita.[21] At the former period a yield of 25 bushels per acre was said to be a fair estimate on the tract in Ohio extending from the Muskingum to the Scioto and Great Miami rivers.[22] It was just about this time that improved means of transportation afforded access to this fertile region and Ohio was soon the center of the wheat producing area;[23] and yet in less than thirty years Ohio was held up before the farmers of Wisconsin as a striking illustration of over-specialization in wheat growing.[24] In 1845, the average yield of wheat per acre in eastern New York was but 8 bushels to the acre, and its cultivation had been almost abandoned.[25] In the Mohawk-Hudson district the yield of wheat for the same year was but 9⅗ bushels per acre, and the crop was no longer profitable except for "family consumption."[26] The western district or northern half of the western part of the state was said to be unsurpassed for wheat growing, as to soil and climate,

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[18] "Grain is frequently put into the ground without ploughing, the ground being only broke with a heavy harrow, and often yields, with this cultivation upwards of twenty bushels of wheat per acre." *Ibid.*, 682. See also *Prairie Farmer*, **10**: 172–73.

[19] Campbell, *Life and Writings of DeWitt Clinton* (N. Y. 1849), 153.

[20] *Commercial Directory*, J. C. Kayser and Company, (Phila. 1823), 118.

[21] *Rep. of Com. of Agric.* for the year 1868. (U. S.) p. 20. It is significant of changed conditions of production that in 1860 yields of 30 to 35 bushels of wheat per acre were reported in Massachusetts, but at a cost of from $45 to $55, of which from $25 to $30 had been expended for manure. Careful and liberal cultivation was also required. *Ibid.*, pp. 480–81.

[22] *Commercial Directory*, J. C. Kayser & Co., 153.

[23] See *Rep. of Milwaukee Chamber of Com.* for 1871, p. 148.

[24] See above pp. 14, 20.

[25] Winden, Julien—*The Influence of the Erie Canal upon the Population along its Course.* MSS. Senior Thesis, Univ. of Wis., 1900. [Quoting from Emmons, *Natural History of New York.*]

[26] *Ibid.*; see also *Wis. Farmer*, **10**: 337.

but the average yield had declined by 1845 to 15½ bushels to the acre and this was to be regarded as the "spontaneous growth of the fields rather than the result of high cultivation.[27] It was pointed out in 1848 that land in this same region so treated as to yield 20 bushels per acre cost for cultivation $11.25 per acre, or about 56¼ cents per bushel; and that it could be put down in Liverpool at a cost of 15 cents, or a total cost of 71 cents per bushel, where it came into competition with the English wheat which had cost $1.10 per bushel.[28] This calculation reveals both the possibilities of the English market for the American wheat farmer in general and at the same time the superior advantages of the frontier wheat farmers on the cheap, fertile lands of Wisconsin over the older New York wheat region. Attention may be directed again to illustrations already given of the production of wheat at a low cost in the former state—including the original cost of the land—for the purpose of demonstrating both the smallness of the cost per bushel and the low proportion of the whole cost included in the original purchase of the land. In one of the above illustrations, the total cost per bushel, including the entire original cost of the land, was about 50 cents. The cost of the land amounted to but 12½ per cent. of the total cost of purchasing the land and producing and marketing the wheat, and was exceeded 25 per cent. by the single item of "breaking," as well as equalled by the item of "harvesting and stacking." Exclusive of the cost of the land, the cost per bushel was about 44 cents.[29]

In another case in Wisconsin, represented as typical, the entire cost of "buying and settling a farm of 160 acres, with a comfortable log house and 40 acres of prairie fenced with ditch" and incidentally "breaking" the 40 acres and raising thereon 1,000 bushels of wheat, amounted to only $735, or at a cost of only 73½ cents per bushel for the wheat, with a farm of 160 acres and a house thrown in. In this case, the cost of the land amounted to but 27 per cent. of the whole expenditure and was

[27] *Ibid.*

[28] *Hunt's Mer. Mag.*, 22: 323.

[29] See above p. 35, note 82 (b). In the other case, the analogous cost was about 30 cents per bushel. See *Ibid.*, note 82 (a).

exceeded 40 per cent. by the combined cost of fencing and breaking only one-fourth of the land. Inspection of the itemized statement shows that to raise the same amount the second year, which was, on the average, possible,[30] would require less than one-third the outlay, omitting the cost of the land, of the house, of the fencing, and at least one-half the cost for plowing, which in this case is above the average:

"Cost of 160 acres of land	$200.00
House,	80.00
Fencing,	160.00
Ploughing 40 acres,	120.00
Seed for sowing,	25.00
Sowing and harrowing,	50.00
Total	$635.00
Crop, 25 bushels per acre, 1,000 bushels	$500.00
Deduct for harvesting, markets, etc.,	100.00
Leaves the net proceeds,	$400.00
Deduct ($400) from $635 leaves balance of	$235.00."[31]

The yield in these instances was not extraordinary. Much higher yields were often obtained.[32] The price received for the

[30] See Pat. Office Rep. *Agriculture,* 1850–51, p. 8.

[31] Hazard, *United States Com. and Stat. Reg.,* 4: 69, (1841) quoted from the *Southport,* (Wis.) *Telegraph.* See also *Wis. Farmer,* 1: 44.

See *Trans. Amer. Inst.,* 1858, p. 100 for another estimate for a more advanced stage in the occupation of land in Wisconsin, where the total cost of putting 120 acres to wheat, including the cost of the "raw land" at $5 per acre was $1,362. The proceeds including the 120 acres of farm land, now "improved" and worth $10 per acre, amounted to $2,370. Estimating, more properly, the raw land lower and the improved land higher the real profits were calculated to amount to fully $1,600.

See Ellsworth—*Valley of the Upper Wabash,* 1838, pp. 58–9 for an entirely analogous estimate for Indiana in 1838.

[32] One man raised 3,950 bushels of wheat on 100 acres near Green Lake, about 1842. The following year he raised 3,650 bushels on the same land at a cost of less than 20 cents per bushel. The wheat was cut with a cradle and threshed at a cost of 3 cents per bushel. After the first two years, however, he never succeeded in raising any wheat at a profit. *Trans. of State Agric. Soc.,* 1879–80, pp. 220–22.

wheat was also low, when compared with that which stimulated wheat growing in the state shortly after the introduction of railroads.[33] Nor were the crude methods of cultivation that were incidental to the growing of wheat on cheap lands elsewhere wanting in Wisconsin.[34] After the first breaking of the land plowing was often very shallow, or even dispensed with entirely.[35] Implements of the most primitive character were often used.[36] The same fields were in some cases cultivated continuously to wheat for a generation or more.[37] Methods of rotation if followed at all were often imperfect[38] and no effort was made to return to the soil the elements withdrawn from it and which made for available fertility.[39] In short, nature did much, and man, little.

How this system of wheat growing had by 1850 wrought out its normal, disastrous results over the area of which it had taken possession in Wisconsin at that time has been already described; and it has been shown how a rise in the price of wheat and the introduction of improved means of transportation revived that system and spread it with extraordinary rapidity over the remaining available wheat lands of the state, to repeat on a scale many fold greater its course of exploitation and incipient ruin. "But westward the star of grain growing takes its way."[40] The same causes that had diminished the succes-

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[33] See above p. 46, note 38.

[34] See *Hist. of Crawford County, Wis.* (Union Publ. Co., 1884), pp. 409–10. See *Rep. of Com. of Agric.* (U. S.) for 1868, p. 19. Also *Trans. of State Agric. Soc.*, 1871, pp. 241 ff.

[35] See above p. 48.

[36] "I see men every day who say they wish they could raise wheat as they did 25 or 30 years ago, turn the sod over and shake on the seed. I recollect of sowing wheat and raising 30 bushels to the acre, and harrowed it with two pieces of rail with wooden teeth." *Trans. of State Agric. Soc.*, 1875–76, p. 429.

[37] *Ibid.*, pp. 305 and 431. *Sixth Ann. Rep. Wis. Dairymen's Association*, 104.

[38] On new soil in Fond du Lac county, about 1850, farmers usually raised two or three crops of wheat in succession and then alternated with oats or maize or fallowed with weeds.—Pat. Office Rep., *Agriculture*, 1852–53, p. 334.

[39] The statement is a common one that the stables were often moved in order to avoid the task of clearing away the barnyard manure. *Trans. of State Agric. Soc.*, 1853, p. 53: 1860, p. 75; 1861–68, p. 32; 1870, p. 456. Also *Farmers' Inst.* (Wis.) *Bulletin*, No. 5, p. 45.

[40] The *New York Public*, quoted in the *Northwestern Miller*, April 5, 1878. Also Jan. 4, 1878, Supplement.

"What were once the great wheat producing States of the country are becoming less and less so, each succeeding year. The uncertainty of the crop discourages its cultivation in those States and the growing demand for shipment

sive areas farther east and had brought half of Wisconsin under the sway of that grain now operated in turn to almost drive wheat growing beyond the confines of the state. The cheap, fertile lands of Minnesota and Dakota became the new sphere of the operations of the wheat grower, and the land-grant railroad made his operations possible.[41]

In the wake of the disappearing wheat area in Wisconsin there reappeared in an acute form the depressing conditions of the period of 1850, and wheat growing became unprofitable on land that had risen in value[42] while its capacity to produce wheat had in general either declined or was neutralized by the

to western Europe must be supplied from other sources. I venture the prediction that the wheat granary of this continent will yet be found in the valley of the Red River and Saskatchawan." Governor Jayne's *Message,* Dakota Territory, 1862.

"The progress of wheat growing westward is a significant feature of our agriculture. In nine years since 1859 it has been out of all proportion to the increase of population in the same section. West of the Mississippi 1859, the quantity harvested was 25,000,000 bushels; in 1867 it had increased to 65,000,000 bushels; and in 1868 the product was 70,000,000 bushels. Nine years ago the proportion produced was but 14 per cent; now it is 30 per cent. of the total product." *Rep. of the Com. of Agric.* (U. S.) for 1868, p. 17.

"He (the pioneer wheat farmer) knows there is danger of reducing the productive value of his land, but its original cost was an insignificant fraction of its intrinsic value, which is more than repaid by the net proceeds of a single crop. He cares little for a small diminution of productive capacity while he can fence and stock his farm, and place money in bank, from the sale of successive crops of wheat, and then sell the naked land for tenfold its original cost. Immediate returns with the least labor and capital, are the objects of the pioneer. As an expedient, for a poor man, the present practice may be tolerated; as a regular system of farm management, it is reprehensible and ruinous. It will doubtless continue in vogue till our virgin wheat lands are run over by pioneers, who will ultimately be succeeded by scientific farmers who will practice rotation, draining, irrigation, in certain sections, and fertilization from home resources, when the yield will be greatly increased and crops will be surer.

"The relative area of wheat must therefore continue its decrease eastward, and its increase westward, till our agriculture changes from its chrysalis state to its development as a complete system." *Ibid.,* 18.

[41] *Rep. of the Com. of Agric.* (U. S.) for 1868, p. 16; see above p. 89 ff.

"The grand land craze caused by the immense yield of wheat in Minnesota, according to the *Pioneer Press,* does not abate, but on the contrary increases daily. Parties went out on Friday over the Northern Pacific, the St. Paul and Pacific, and the Sioux City roads to hunt for farms. People appear to be coming from all parts of the Union to get a slice of Minnesota lands." *Northwestern Miller,* Nov. 9, 1877.

[42] This rise in the value of land was due to a complex of causes. In part it represented the profitableness of wheat growing at an earlier period, which had been capitalized—and in some cases over-capitalized as a result of speculative activity. In large measure it represented the cost of fixed improve-

competition of other farm pursuits better adapted to the new conditions. A more general recognition of the evils of a too extensive method of cultivation and of the tying up of capital in an undue amount of land was accompanied by a less favorable attitude toward the government land policy in general when the farmers of Wisconsin themselves began to suffer from the competition of these new and fertile areas.[43] When some of these

ments—better houses, better barns, drainage, fences—and those numberless conveniences which people are willing to forego while taking up land on the frontier but which come to be considered indispensable with an advancing standard of living and which are yet of minimum utility in the growing of wheat. (See *Trans. of State Agric. Soc.*, 1853, pp. 151–52.) Of like character are those advantages which attach to older communities for residence purposes—opportunities for the amenities of life—society, culture, education—which are in large measure incidental to the growth of urban life, and which are of much more significance in the rise of land values than is usually recognized. [Lands in Rock county in 1870 were said to be worth from $10 to $100 per acre, and were sought for "not so much by emigrants seeking cheap lands as by those desiring beautiful homes where they may at once enjoy all the comforts and conveniences to be found in the older and more wealthy portions of the country." *Trans. of State Agric. Soc.*, 1870, p. 456.] The growth of cities, the pressure of population and the exhaustion of cheap government land within the state were other causes. The construction of railroads was another cause, if it can be considered separate from the other causes mentioned. The more rapid fall in interest rates on capital invested in land was another cause of higher land values. See *History of Crowford County, Wis.* (Union Publ. Co., 1884,) 409–10.

[43] In 1870 in Fond du Lac county good, improved farms were worth $45 to $75 per acre—$75 to $100 near cities—and wild lands $10 to $45. It was said that there had been great changes in the system of farming recently; that farmers had begun to realize the folly of wearing out their land raising wheat at an average cost of $1 and selling it for 85 cents; that the time "was passed" when wheat could be raised for 50 cents at a large profit; that only new and cheap lands could do this and that other pursuits were found more profitable. *Trans. of State Agric. Soc*, p. 407 ff. [The average cash valuation of farms in Fond du Lac county had increased from $30.19 in 1859 to $48.04 in 1869. See Table XXIII.] See speech of Pres. West, of Mil. Ch. of Com., Apr. 8, 1871, in *Rep. of Milwaukee Chamber of Com.* for 1871, p. 144.

"We are menaced on the north and west with a large area of rich, cheap land that will soon send its products into our markets at prices far below the cost of production here, at all consistent with the present price of Wisconsin farms. Just now we are protected by what we please to call railroad extortions on freights: but when forty-five cent wheat from Dakota and twenty-five dollar four-year-old steers from Kansas, are freighted to Chicago as cheaply as they now are from Chicago to New York, we shall have to adopt some more productive farming than that now prevailing among the majority of farmers." *Trans. of State Agric. Soc.*, 1879–80, p. 197.

"Changed conditions in soil and climate, deterioration of the soil and last and greatest the competition of the new and great wheat fields of the far northwest, where lands are cheap and organized labor on a large scale reduces the cost of production to the lowest figure, have all combined to render the production of small grain alone a discouraging task if not a ruinous failure." *Ibid.*, 1881–82, p. 181.

same farmers, disposing of their own land, migrated to the new wheat areas in Minnesota and Dakota, the parallel between Wisconsin and the older wheat areas to the east was complete.[44]

It was asserted in 1857 that a revulsion in commercial affairs, even if it came, could not affect the farmers of Wisconsin, who had purchased lands at $1.50 to $2 per acre, inasmuch as the first crop generally paid for both farm and improvements.[45] But the price of land under those circumstances does not remain at that figure, and, as a result of the wild speculation that followed, land rose enormously in value within a brief period. The cost of labor and of materials also rose greatly and it thus happened that with a declining market the wheat crop of 1857 cost from 25 cents to 30 cents per bushel more than was received for it,[46] and the revulsion came notwithstanding. So great was the reaction caused by the depression, which was emphasized by unfavorable crops for two or three years, that it was seriously questioned whether, after all, the Northwest was in the real wheat belt.[47]

The next period of marked general depression occurred during the years that followed the Civil War[48] when conditions were again changing from a speculative to a more stable basis. It was asserted that the time had come for important changes in

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[44] See *Northwestern Miller,* for April 18, 1879, relative to the "steady exodus" from the eastern part of Minnesota and from Wisconsin and other states to the new region to the north and west. The statement is also made that the exports of wheat from that region had already materially "changed the grain markets of the old world."

This migration was not without its advantages for the agriculture of the state as those who went were usually those who had learned to raise nothing but wheat and who were unable to adapt themselves to the new conditions, but went west again "to begin anew their frontier farming upon virgin soil." They were then replaced by immigrants accustomed to better methods of culture. *Hist. of Crawford County,* Wis. (Union Publ. Co., 1884) 409-10. See *Trans. of State Agric. Soc.,* 1871, pp. 243-44; *Northwestern Miller,* Nov. 8, 1878; *Tenth Ann. Rep. Wis. Dairymen's Assoc.,* 65.

[45] Ritchie, *Wisconsin and Her Resources,* 174.

[46] *Rep. of Milwaukee Chamber of Com.* for 1858, p. 9. The effect of this rise in the value of land upon the cost of producing wheat was due to the fact that much land changed hands at these fancy prices. Had the land remained in the hands of the original owners the increase in its value would not have directly increased the cost of producing the wheat. See Hibbard, *Hist. of Agric. in Dane Co.,* pp. 130, 195-96.

[47] *Wis. Farmer,* 13: 33-5.

[48] See above p. 71 ff.

the La Crosse valley and that too much time, labor, and money were expended in raising wheat unless a price of $1.75 to $2 per bushel could be depended on.[49]

In Jefferson county, it was said in 1870 in reference to the "hard times" that though the crops might be as abundant as in more prosperous years yet the farmers in very few instances had anything left after paying the expenses of production and living and in many instances did not realize enough on their crops to meet expenses.[50] Land is said to have sold at $20 per acre in that county a little later,[51] and it is asserted that the farms were mortgaged up to 60 per cent. of their value.[52] The statement has also been made that "the farms of Wisconsin were all blanketed with mortgages" about the same time.[53] The reason given for this depression was the decline in the yield of wheat. This may be accepted as valid in part, but the statistics in reference to yield per acre do not indicate so extreme a decline as is claimed, either in Jefferson county or in the state as a whole.[54] The great fall in the price of wheat about that time,[55] coupled with the high cost of production[56] and the competition—just then becoming serious[57]—of the new wheat areas to the west, would seem to indicate that inflated land values played no small part in making the wheat crop unprofitable, and that the phenomena of depression represented in part a

[49] *Sparta Herald* (Monroe Co.) May 4 and 18, 1869.

[50] *Jefferson Banner,* July 13, 1870. The blame was laid upon the tariff.

[51] *Trans. of State Agric. Soc.,* 1895, p. 265. This figure can hardly be accepted as indicating the value of land generally in that county at that time. See Table XXIII.

[52] *Ibid.*

[53] *Ibid.,* 1888, p. 180.

[54] The yield of Jefferson county was said to have been reduced to 8 bushels per acre. This seems improbable, as Jefferson county in 1869 shows the highest per capita yield of any census period. Further the yield per acre in that county for the year 1869 calculated on an acreage of 50,000 acres (very considerably above the acreage for 1877) amounts to more than 12 bushels per acre. See also *Jefferson Banner,* Aug. 4, 1869; July 13 and Aug. 24, 1870.

Inasmuch as the per capita yield for the whole state was also at the maximum in 1869, the statement of a greatly diminished yield for the whole state at that time can scarcely be accepted.

[55] See Tables VIII-X.

[56] See above note 43.

[57] See above pp. 4, 89-90, 129 ff.

readjustment to more normal values.[58] This is borne out by referring to the figures for the average cash valuations of farms in the state in 1870.[59] A majority of the counties that were important in the production of wheat in 1869 show declines in the cash valuation of land for the decade 1869–1879. That this decline in land values may have been due to depression in the wheat industry does not invalidate the hypothesis that land values were too high to raise wheat, but serves to strengthen it. Neither would it be valid to assume that with the decline in the value of land the growing of wheat might have been expected to regain the ground that had been lost. There was naturally a tendency to introduce other farm pursuits better adapted to the changed conditions and which might be expected to produce a larger income even than wheat had formerly done. The higher standard of living demanded an increased income and not merely the same income that had been formerly enjoyed.[60] The unprofitableness of the wheat crop proved a favorable opportunity for experiment in a more diversified agriculture, and, this experiment proving successful, the fall in the value of land was checked and did not proceed far enough to place wheat growing on the same competitive level in Wisconsin as on the cheap lands of Minnesota and Dakota. So far from that, land values, responding to the profitableness of the new pursuits, moved up to a point higher than before and wheat growing in Wisconsin, was as a result not only not able to compete with the growing of wheat on the cheaper lands of Minnesota and Dakota, but was also unable to compete with the more profitable farm pursuits at home. It is not surprising then that under these circumstances the growing of wheat continued to

[58] It was said that in 1872 some thought 75 cents per bushel for wheat would pay; others that not less than $1.00 per bushel could be made to pay. One man was of the opinion that to pay all expenses and 7 per cent. interest on the value of the land required $15 per acre and that a crop of 15 bushels to the acre accordingly brought no profit. In 1872 with a yield of 18 bushels per acre there was a profit of $3 per acre. In ordinary years, however, with a yield of 14 bushels per acre, there was a loss on the investment, though the majority of the farmers did not keep books and went on at a loss—not realizing it. Martin, *History of the Grange Movement*, 385-86.

[59] See Table XXIII.

[60] See above p. 71, note 1.

decline in Wisconsin. This substitution of more profitable farm pursuits for wheat growing and the resulting upward tendency in land values was evident in many of the counties by 1880 though much more marked during the succeeding decades.[61] Green, Jefferson, Rock, Sheboygan, and Walworth counties afford illustrations.[62] That the conditions in reference to wheat growing were yet on the whole dominant in respect to the movement of land values is proved by the decrease in the cash valuation of land which accompanied the great falling off in the production of wheat during the decade 1869–1879 in Columbia, Dane, Dodge, Grant, Green Lake, Iowa, Lafayette, and Vernon counties and the increase in the value of land which accompanied the increased importance of wheat growing in Door, Kewaunee, Manitowoc, Ozaukee, and Washington counties, as well as in some of the western counties.[63]

During the following two decades, however, marked declines in the production of wheat, accompanied by the substitution of other farm pursuits, have gone hand in hand with greatly increased land values, while wheat growing has persisted longest in those counties where land values have been, in general, moderate.[64]

The effect of the land grant system upon the introduction of railroads and thus upon the spread of wheat growing in Wisconsin need not detain us long in this connection. It has been seen

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[61] See Table XXIII.

[62] *Ibid.* See also *Bulletin of the Agric. Exper. Stat., Univ. of Wis.*, No. 60, p. 17 for the early development of the cheese industry in Sheboygan and Jefferson counties. Recall the growth of tobacco growing in Rock county.

[63] Compare Tables III and XXIII. Manitowoc, Ozaukee, and Washington counties present exceptions to the general tendency of wheat growing to decline on high priced land. It is asserted that the culture of wheat is best adapted to putting the heavy red clay soils of the eastern counties into cultivable condition. This may afford a partial explanation.

See Martin, *History of the Grange Movement*, 333, (1873) for the statement that the effect of a change in price of one cent per 100 lbs. of wheat amounted to $1.16 per acre upon the value of land in Wisconsin.

[64] Compare again Tables III and XXIII, and note the comparatively low cash valuations in Buffalo, St. Croix, Polk, Pierce, Kewaunee, Door, Trempealeau, Pepin, Shawano, Jackson, and Monroe counties. Calumet, Manitowoc, and Brown present exceptions, but the higher average in the cash values of land in these counties may be due to the influence of the cities in this section upon the value of the lands in their immediate neighborhood.

already that the first effect of the introduction of railroads was toward more excessive specialization in the culture of wheat as well as toward its rapid spread into regions previously inaccessible.[65] It is here proposed merely to point out the connection between the existence of a great body of cheap land which was disposable at a nominal price, and the system of land grants by which the construction of railroads and other internal improvements was stimulated. No one can follow the history of internal improvements in the United States and not be impressed with the significance of this connection. One argument advanced on the part of the government was the familiar one that internal improvements would increase the value of the public lands as a whole and hence that it was desirable to encourage internal improvements by granting a portion of the public lands in aid of the various projects. The settlers who took up the lands on the frontier had on their part a double object in the promotion of railroads. In the first place they desired an outlet for their surplus product, so soon as they had a surplus product, and in the second place as land speculators they favored internal improvements for the increment of value which would thereby be added to their land. As we have already seen,[66] the break-down of the home market in Wisconsin led to the abandonment, by the early settlers of the state, of their hostility toward railroads on account of the supposed monopolistic features connected therewith, together with whatever of opposition they may have had to the system of land grants on the ground that it removed a portion of the public lands from settlement as well as raised the price of the desirable lands.[67] Having thrown their scruples to the winds, the people of Wisconsin were thereupon as eager for the construction of railroads as they had been hostile to them before. On the same principle as that advocated by those who determined the public

[65] See above p. 40 ff; also below p. 140 ff.

[66] See above pp. 17–19, 35.

[67] See Sanborn, *Congressional Grants of Land in Aid of Railroads*, pp. 31, 37, 46–7. It seems clear that the effect of the railroads in opening the new areas to cultivation, and in adding to the value of the lands of the settlers themselves far outweighed these opposing tendencies. See, however, below p. 144.

land policy, they were willing to aid the railroads for the sake of the effect upon the value of their own lands. Further, in addition to their rôle as speculators in land, they now essayed to speculate in railroad stocks. In the latter capacity they soon came to grief and the effect was to diminish both their ability and their inclination to make permanent improvements or to adopt an improved system of farming and get out of the rut of wheat culture, which they found peculiarly suited to their situation. Cheap land was thus a main factor in the introduction of railroads into Wisconsin, which in turn reacted favorably upon the cultivation of that same land to wheat.

It is not argued that the policy of cheap lands led to wheat growing, but that it led to the excessive cultivation of wheat; nor that the extension of that policy to the new lands beyond Wisconsin, alone led to the decline of wheat growing within that state, but that that policy was the main factor in both cases in respect to Wisconsin just as it had been in respect to the former wheat areas to the east of that state, and as it has been in the case of the newer areas to the west.[68] If it be argued that the policy provided homes for the homeless and lands for the landless, it may be answered that there will still be the homeless and the landless.[69] If it gave many in the older portions of the country a new start in life,[70] it may be

[68] For description of how the same conditions have been or are being repeated in Minnesota and the Dakotas see the following: C. W. Thompson, *The Movement of Wheat Growing. A Study of a Leading State,* in *Quart. Journ. Econom.* **18**: 570; Hon. C. C. Andrews, *Conditions and Needs of Spring Wheat Culture in the Northwest* in *Special Report of the Dep. of Agric.* (U. S.), Vol. IV, No. 40 (1882); Hagerty, *Statist. and Polit. Abstract of the Territory of Dakota,* (1889) p. 72 ff; *Wheat Raising in the Red River Valley in Minn.* in *Hist. Soc. Coll.,* **10**: 1-33; J. A. Wheelock, *Second Ann. Rep. of Com. of Statist.* (Minn.) for 1860 and 1861, pp. 56, 66, 71, et al.; *First Ann. Rep. of the Assist. Sec'y of State, Minn.,* Dec. 30, 1869, p. 10 ff.; *Report of the Second Ann. Farmers' Inst.* at Le Seur, Minn. Mch. 9-11, 1887; *Second Ann. Report of Com. of Stat.* (Minn.), Jan., 1871, p. 11 ff.; *Northwestern Miller,* Jan. 4, Jan. 26, Feb. 1, May 3, July 5, Sept. 6, Oct. 4, Nov. 8, 1878; Jan. 24, May 30, June 6, 1879. See various county histories of Minnesota, especially by Nelll. See also *Munsey's* **25**: 17-30; *Nineteenth Century,* **6**: 10. See *Rep. of Ind. Com.,* (1900) Vol. X., Index.

[69] *Rep. of Ind. Com.* for 1900, **10**: 10-11, testimony of Assist. Sec. U. S. Dep. of Agric., Joseph H. Brigham.

[70] *Ibid.,* 171, testimony of Le Grand Powers, Chief of Div. of Agric. U. S. Census.

answered that it injured those who remained behind and in a vicious circle of reaction drove them, too, to sacrifice their own lands and seek the cheaper and more fertile ones farther west.[71] It accentuated the natural tendency to that undesirable economic instability which always characterizes the frontier region. If justified at all, it must be justified on other than on economic grounds, and it may be questioned whether it can be justified on any grounds. For fields that were slovenly and impoverished and that ran to weeds, for homes sold under foreclosure, for class antagonisms begotten of financial distress, for lives, narrow and unlovely, born of the shiftless monotony of continuous cropping to wheat—for this the prodigal system of cheap government land was in large measure responsible.

[71] *Ibid.*, 37, 86, 175 ff, 266, 366 et al. (See index).

CHAPTER IX

RELATIONS BETWEEN THE WHEAT GROWER AND THE COMMON CARRIER

It has been shown that the railroad came just in time in Wisconsin to prevent the cultivation of wheat from being relegated to a rational and scientific coördination with the growing of other farm crops and with other farm pursuits. The early distrust of railroads by the farmers and the slow acceptance by the latter of the belief in their apparent necessity has been referred to, and attention was called to the extremes to which the farmers went in order to secure the construction of railroads when once considered necessary and advantageous, and to the bright anticipations that some at least held in respect to them.[1] It remains to follow the subsequent relations between the wheat grower and the common carrier.

The farmer in Wisconsin was interested in the railroads just as he was interested in immigration,—because both furnished him a market and both tended to increase the value of his land. Cheap land meant the possibility of great rise in the value of land, provided railroads gave access to a market and provided immigration could be kept up. The rise that actually occurred was in part speculative and in part a legitimate and natural

[1] See above p. 40 ff. "When the railroad penetrates our borders and gives us at all times access to the Atlantic Seaboard, what more can the farmer ask or need but well directed industry to crown his efforts." Thomas T. Whittlesby, at the meeting of the Dane Co. Agricultural Society, 1852. *Trans. of State Agric. Soc.*, 1852, p. 104.

See Tuttle, *History of Wisconsin*, 1875, p. 276.

increase of values.[2] The prediction of the chief engineer of the Milwaukee and Mississippi railroad[3] that "every acre of land which comes within the influence of this road will be doubled and trebled in value as soon as it is completed" was not far from being realized. Wherever the railroad reached or whereever there was the possibility of its reaching, the effects were magical. The southern part of the state was the first to experience the buoyant effect of the new order of things. Good crops and high prices for farm produce combined with the influence of the railroad to bring about the "good time."[4] As railroads were rapidly pushed into other portions of the state, depression was there, too, succeeded by prosperity and stagnation gave way to the most active and feverish speculation.[5] The land booms of a hundred other American communities were repeated in various parts of Wisconsin, with all their extravagant accompaniments.[6] Confidence reigned supreme and the

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[2] See Gregory, *Industrial Resources of Wisconsin*, pp. 236–37, for an estimate of the comparative value of farm crops to the farmer when marketed via common road and via railroad. (See Hibbard, p. 140, note 27.) See also the quotation in the *Milwaukee Sentinel* for September 27, 1850, from the *Madison Argus* to the effect that the extension of the Milwaukee and Misaissippi railroad into Dane county would add $2.60 value to every acre in the county.

[3] *Report*, June 1, 1852.See Periam, *The Groundswell*, p. 446, for the statement (by J. W. Midgeley, President's Secretary, North-Western Ry.) that carefully prepared statistics showed that every additional mile of railroad to 100,000 acres of farm land yielded an average increase of $1.00 per acre, in the West. The increase in the value of farm lands in Wisconsin during the decade 1850–1860 is given as $7.02 per acre. Compare with Table XXIII.

[4] "It is but comparatively a short time since Rock county was a wild and uncultivated waste. Now it is teeming with civilization and refinement. But when the Chicago, St. Paul and Fond du Lac on the north and the Southern Wisconsin on the west shall be completed together with other public improvements . . . its latent resources will begin to be developed." Annual address before the Rock County Agricultural Society and Mechanic's Institute, by Colonel Z. P. Burdick, in *Trans. of State Agric. Soc.*, 1854, '55, '56, '57, pp. 151–60. See above p. 40, note 9.

[5] "The completion of the Milwaukee and Mississippi railroad to this point (Whitewater) in 1852 made a perfect revolution, in not only the village, but in the surrounding country also; nor did the change cease when the road was built beyond us." *Governor's Message and Accompanying Documents*, 1857, 2: 427–34.

[6] See above p. 45. "I purchased land in 1856 near Ripon for $1.25 per acre. In 1857 the railroad was completed to Ripon and in the fall of the year I sold the same land for $32.50 per acre. That was because we had the means of sending our produce to market." *Trans. of State Agric. Soc.*, 1879–80, p. 222.

possibility even of a reaction, in Wisconsin, at least, was scouted.[7] Many a farm was sowed to wheat not merely because it was profitable, but because men bought land to sell again at an advance and the securing of a crop of wheat involved no outlay of capital for permanent improvements.[8] Instability thus set its stamp on the economic development of Wisconsin, and the subsidized railroad was one of its chief agents.

The effect of farm mortgages in stimulating the construction of railroads in Wisconsin is very hard to estimate. The entire amount was relatively small when compared with the total cost of the railroads.[9] But it must be remembered that these mortgages were given at the inception of the railroads and would thus have a greater influence than the absolute amount might seem to indicate. They were largely confined, too, to certain limited sections of the state and to certain railroads. There can be no doubt that the effect was very great in making these early railway enterprises tangible propositions, in actually setting the construction on foot. If it happened that in many cases the original promoters failed of success and the farmers who had given their mortgages in return for stock in the railroad found

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[7] Ritchie, *Wisconsin and its Resources*, 172, 174.

[8] See above p. 34, note 9; see also p. 46.

[9] See Meyer, *Early Railroad Legislation in Wisconsin*, in *Wis. Hist. Col.*, **14**: 361, 362. "The farm mortgages in 1874 amounted to about one per cent. of the total valuation . . . by the State Board in 1875."

See *Hist. of Fond du Lac County* (West. Hist. Co., 1880), 185, where an estimate of $4,079,433 is given for total farm mortgages; Cary, *Organization and History of C. M. and St. P. R. R.*, 17; also, *Second Ann. Rep. of the La-Crosse and Milwaukee R R.*, Dec. 31, 1853; also *Ibid.* for 1854 and 1857; *First Ann. Rep. of Mil., Waukesha and Miss. R. R. Co.*, Dec. 31, 1849. Over 2,000 farmers and other citizens residing along the Milwaukee and Mississippi railroad had contributed over $1,000,000 to that road in bonds and mortgages by 1857. *Memorial* of that Company to the Legislature against the extension of the Madison and Watertown R. R. to the Mississippi river., Feb. 21, 1857.

The farmers of Ozaukee county made private subscriptions of $200.000 to the Milwaukee and Superior railroad. *Ann. Rep.* for 1856. For an estimate by counties, of the aid extended to railroads in bonds, farm mortgages, etc., in Wisconsin, see *Wisconsin Miscel. Pamph.* Vol. 15, No. 6, (Lib. of Wis. His. Soc.), (From the *Madison Democrat.*) See *Hist. of Washington and Ozaukee Counties* (West. Hist. Co., Chicago: 1881), 356; *Hist. of Waukesha County*, (West. Hist. Co., Chicago: 1880), 389; also Holford, *Hist. of Grant Co.*, (1900) 72; *Hist. of Green Co.* (Union Publ. Co., Springfield, Ill., 1884,) p. 385 ff for history of farm mortgages and of the extension of the railroad from Janesville to Monroe; Ellis, *Hist. of Portage Co.*, read at Centennial Celebration at Steven's Point, July 4, 1876. See various other county histories.

that stock and the guarantee of the company to pay the interest on their mortgages equally worthless, the enterprises, nevertheless, often went into the hands of eastern capitalists who carried the railroads to completion. The scheme would certainly have done justice to the times of John Law,[10] and brought its full complement of ruin and disaster, besides being a fruitful source of irritation between the farmers and the railroads.[11]

[10]"The *modus operandi* was for the farmer to subscribe to the stock, give his note for the amount of his subscription, payable to the order of the company, secured by a mortgage on his farm bearing from 8 per cent. to 10 per cent. interest. The company then attached to said note and mortgage its bond guaranteeing the payment of the note and mortgage, principal and interest, and in and by the terms of the bond, the note and mortgage were assigned to the holder, and such note, mortgage and bond were sold in the market together as one security, and not separately, the note not endorsed. An agreement was also given to the farmer by which the company agreed to pay the interest on the note until it became due, in consideration of which the farmer made an assignment of his prospective dividends on the stock so subscribed, for sufficient to pay said interest.

"It is needless to say that this stock proved worthless and that the farmers were compelled to pay their morgages and in very many cases lost their farms." Cary, *Organization and History of the C. M. and St. P. R. R.*, 17-18. See *Ibid.*, 13, 201, 326 ff.

"Many still living have a recollection of the ease with which they could mortgage their homes to aid that enterprise. Many who had so mortgaged their farms will remember the hardships and difficulties encountered in redeeming their homes." *Hist. of Dodge Co.*, (West. Hist. Co., 1880), 521.

"A careful estimate of the amount of mortgages taken in Wisconsin discloses the fact that over $2,000,000 were raised and put into railroads by farmers' mortgages for which these men never got a cent." *Chicago Times*, Aug. 7, 1875. See also *Monroe Sentinel*, Sept. 6, 1854.

[11] See Martin, *History of the Grange Movement.*, 377-78. See *Rep. of Select. Committee* appointed under Resolution No. 128, Assembly, to investigate the affairs of the Milwaukee and Superior R. R., May 12, 1858. Fraud was reported in connection with that Company and the Fond du Lac Air Line Company, in reference to the farm mortgages given by German farmers. Special action of the Legislature was recommended in order to prevent the fraud from being consummated, and the farmers from losing their land.

See *Letter* (Oct. 3, 1861) from the "Farmers' General Home League," Janesville, Wis., in reference to farm mortgages, and the *Answers* of the Mil. and Prairie du Chien Ry. Co., and of the trustees of the creditors of the Mil. and Miss. Ry. Co. (Pamphlet, Lib. Wis. State Hist. Soc.) The farmers had organized to prevent the foreclosure of the mortgages. See *Reply to the Address of the Farmers' General Home League*, of the Mil. and Miss. R. R. Co. (Pamphlet, Milwaukee, 1861.) See Sanborn, *Congressional Grants of Land in aid of Railways*, 99-100, in reference to the Wisconsin Farm Mortgage Land Company, created by act of legislature in 1868 to manage "the lands patented to the state on account of the line between Portage and Tomah, . . in the interest of the farmers along the line who had subscribed for stock in the La Crosse and Milwaukee Company and mortgaged their land as security." See Sec'y of State's *Rep.* for 1877, pp. 60, 61, 63. See speech of Hon. Geo. B. Smith, before the Southern Wis. Agric. Soc., Janesville, Oct. 2, 1874, in *Trans. of State Agric. Soc.*, 1874-75, pp. 480-95.

The effects of the railroads were by no means universally regarded as entirely beneficial. The part they played in the restoration of the exclusive culture of wheat was noted and condemned,[12] as was also their tendency to divert the capital of the farmer from the more legitimate channels of agricultural enterprise into doubtful investment in railroad stocks.[13] The effect of the building of railroads upon the cost of farming must also be noted. It drew upon the labor supply and by opening up new lands enabled some who had formerly been farm laborers to take up land for themselves.[14] It was said that the wheat crop of 1857 had cost the farmers of Wisconsin from seventy-five cents to one dollar per bushel,[15] and in this increased cost the railroads had a considerable part. Then, too, in most cases the effect of railroad construction was to accelerate the settlement and bringing of new land into cultivation with undesirable rapidity. The railroad thus multiplied the number of the farmer's competitors, as against giving him a better market. In the annual report of the Milwaukee and Mississippi River railroad for 1857, attention was called to the building of the McGregor, St. Peter and Missouri River railroad from McGregor, opposite Prairie du Chien, westward, and that region was said to be already occupied to a large extent and under cultivation for 150

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[12] "Wisconsin is being skinned—not slowly either, as steam and telegraph have quickened the spirit of the age. The easier and faster modes of cultivation, the Reaper, the Threshing machine, the Railroad are only so many additional helpers and accessories to the more rapid depletion of the soil of the fertile virgin prairies of the west." *Wis. Farmer,* 9: 381.

[13] "Many of our farmers are mortgaging their farms and paying ten per cent. interest, to invest in railroad stock, and are receiving on those investments ten and fifteen per cent. stock dividends, including interest. How much better it would be for the farmer to resort to the same means to get money to invest in sheep and have the satisfaction of controlling his *own property* and realizing over and above intereat, twenty or thirty per cent. cash dividends. They will say that their farms are enhanced in value by building railroads which I will admit, and will add—your farms are equally enhanced in value by keeping sheep. And so far as transportation is concerned, a grain farmer in this State is farther from a market with a depot at his door, than the wool grower is without a railroad." *Ibid.,* 7: 73.

[14] See Martin, *History of the Grange Movement,* 380-81. See *Wis. Farmer,* 6: 3, for the statement that there were probably more than sixty or seventy thousand men engaged upon railroads alone in the states west of the Ohio river.

[15] *Rep. of Milwaukee Board of Trade* for 1858.

miles west of the Mississippi river by farmers who were subscribing and paying liberally towards the construction of their road.[16] The home market had there, too, been found insufficient and an outlet had to be secured for the constantly increasing surplus. How this grain came directly into competition with that of the Wisconsin farmers is shown by the statement in the report of a committee of the same company a few years later that the country west of the Mississippi river from Dubuque to St. Paul furnished 10,000,000 bushels of wheat for export,—as well as considerable quantities of flour; and that of this wheat about 3,000,000 bushels annually had passed over that road and that double that quantity could be obtained if necessary facilities were offered.[17] This was highly pleasing to the railroads and to the grain dealers of Milwaukee, but it sent millions of bushels into competition with Wisconsin wheat, first at Milwaukee and later in the markets of the world.

Occasionally the railroads were instrumental in holding back land from settlement. This occurred in connection with the "land grants."[18] It must be acknowledged, however, that the evil effects of the opposite tendency were much more extreme and far-reaching.[19] It has been asserted that the land grants had little or nothing to do with the construction of railroads in Wisconsin inasmuch as the latter were built before the land be-

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[16] *Rep. of Mil. and Miss. R. R.* for 1857.

[17] See *Report* of Committee, May, 1863, relative to the securing of a controlling interest in the railroad from McGregor to St. Paul. *Cf.* p. 115 above as to diversion of entire grain trade of upper Mississippi in 1860 to Milwaukee.

See *Trans. of State Agric. Soc.*, 1880-81, p. 43 ff, for the view that this bringing in of cheap land by the extension of railroads meant not decay but progress in the agriculture of the areas farther east, as it resulted in mixed husbandry there.

[18] See *Wis. Farmer*, 8: 421. Also *Hist. of La Crosse Co.* (West. Hist. Co., 1881), pp. 403-4. Also Kessinger, *Hist. of Buffalo Co.*, 369. Also *Trans. of State Agric. Soc.*, 1870, p. 379.

See pamphlet on the *Renewal of the St. Croix and Lake Superior Land Grant*, Hudson, Wis., 1872. Also Sanborn, *Congressional Grants of Land in aid of Railways*, 46.

[19] As a result of the land grant from Tomah to St. Croix and the proposed railroad, "speculation was rife" in Eau Claire county, and "some of the wildest and most visionary schemes ever generated in the mind of man owed their births to this land grant . . . " *Hist. of the Chippewa Valley*, (Geo. Forrester, Ed.), 1891-92, p. 202. See also *Rep. of La Crosse Board of Trade* for 1879. See *Rep. of La Crosse and Mil. R. R.* for 1856.

came available as an asset. It is further claimed that the land grants proved more expensive than they were worth.[20] This view is plainly incorrect for the state as a whole. It is impossible to go far into the history of the early construction of railroads in Wisconsin and not be convinced that the land grants did play an important part in their promotion and initiation, at least. These lands constituted an asset upon which money was borrowed and by means of which capitalists were interested.[21] The fertility and productiveness of Wisconsin lands and the richness of the forests had been heralded far and wide, and it was a perfectly sound proposition that at some future time those lands would be valuable and that the building of railroads would make them valuable. No doubt there were extravagant ideas in reference to the possibilities of thus realizing upon the lands within a brief period, but this consideration serves to emphasize rather than minimize the influence of the land grants upon the initiation of railroad construction.[22]

The early wheat growers of Wisconsin anticipated with the advent of the railroad a lower cost in the marketing of their grain.[23] For a brief time this anticipation was realized in most

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[20] See *Rep. of La Crosse and Mil. R. R.*, for 1856 and 1857.

[21] See Cary, *Organization and History of the C. M. and St. P. R. R.*, 197, 325.

[22] See above, pp. 135–7 for a consideration of the effect of the stimulation of the construction of railroads upon the spread of wheat growing within the state. For an account of land grants to railroads in Wisconsin, see Meyer, *History of Early Railroad Legislation in Wisconsin*, in *Trans. of Wis. Acad. of Sciences, Arts and Letters*, **12**: 360 ff. Also Cary, *Organization and History of the C. M. and St. P. R. R.*, 9, 10, 19, 194, 325; Sanborn, *Congressional Grants of Land in Aid of Railways*.

[23] See above p. 16. See *Trans. of State Agric. Soc.*, 1879–80, pp. 220–1 for a statement by Hon. Sat. Clark of Horicon that in early days he had known a great many of his neighbors to go to Milwaukee with a load of wheat and return without a cent, the expense taking the whole; and that he himself had over three thousand bushels of wheat in his barn which he had been unable to sell at any price but which he sold for 82 cents per bushel as soon as the railroad was completed to Ripon. See *Ibid.*, 1880–81, p. 42 for a similar statement as to hauling of wheat 40 to 100 miles to market—requiring four to ten days—and receiving 35 cents to 50 cents per bushel, and, after paying hotel bills and getting a few necessaries, having scarcely enough money to pay the expenses of returning. See Martin, *History of the Grange Movement*, 377, for the statement that farmers were promised the carriage of wheat to Milwaukee, after the construction of the proposed railroads, for 5 cents to 10 cents per bushel instead of the 25 cents to 50 cents they were then paying. The cost of transporting wheat from Whitewater to the lake in 1851 averaged

parts of the state.[24] The railroads, in their turn, had early emphasized the improbability of competition between the various lines that were being built, asserting that there was enough traffic for all.[25] Almost immediately, however, in consequence of the panic of 1857 there was serious competition involving low rates at competitive points and on through traffic and discrimination against local traffic and non-competitive points.[26] On the other hand, complaints soon arose among the farmers about high rates and discriminations. As early as 1856 it was asserted that the low price of wheat at Madison was due in part to "high prices of inland freight."[27] The promised control of the railroads by the farmers never materialized to the slighest extent. They found themselves unable to control even the grain dealers,[28] and renewed attention was directed toward securing the

15 cents to 20 cents per bushel and it was asserted that the actual cost of carriage by railroad would not exceed one cent per bushel—thus leaving a profit of 6 cents at a charge of 7 cents per bushel. *Exhibit,* Mil. and Miss. R. R., April 16, 1851.

[24] See above, p. 46, also Hibbard, *Hist. of Agric. in Dane Co.,* 140; and *Rep. of Board of Trade* for 1857, and of *Chamber of Com.* for 1858 and 1859, Milwaukee, for low rates for carriage of grain on the lakes during those years.

[25] "In no part of the West can the construction of Railroads outstrip the wants of the people or their ability to supply them an abundant traffic." Quoted in the *Annual Report of the Milwaukee and Miss. R. R.* for 1853, from the *American Railroad Journal.* See *Ibid., Report* for 1855: also *Rep. of the La Crosse and Milwaukee R. R.* for 1855.

[26] "The *local* business of railroads must mainly be relied upon for support as *through* business is generally *competed* for and does not afford much profit." *Rep. of Mil. and Miss. R. R.,* 1858. See also *Report* for 1857. In 1859 there was loss of revenue and decrease of freight traffic due to competition, to the opening of new lines and to the desire in a depreased period, by rival lines, to secure business at any rate. . . "The local freight is the only encouraging feature exhibited by the operations of the year. . Only a vigorous effort or an arrangement preventing competition or a revival of business can enable the road to be retained by the stock-holders." *Rep. of the Mil. and Miss. R. R.* for 1859.

[27] *Wis. Farmer,* 8: 556. Upon the completion of the Milwaukee and Missisippi railroad to the Mississippi river, that road was compelled in consequence of competition by way of the river, to carry wheat from Prairie du Chien to Milwaukee for 9 cents per bushel,—which was very little, if any, more than from Madison to Milwaukee, half the distance. *Hist. of Green Co.* (Union Pub. Co., Springfield, Ill., 1884), 393.

[28] See Hibbard, *Hist. of Agric. in Dane Co.,* 140, for an account of the opposition to the extortions of the railroads and grain dealers. The Dane County Farmers' Protective Union was organized and built an elevator at Madison. But the opposition ended in a fiasco. The La Crosse road had incurred the hostility of the State Agricultural Society in 1857 by refusing to grant lower rates on stock and articles for exhibition at the annual fair, and on account of general disposition to be "unobliging". *Trans.,* 1854, 55, 56, 57, p. 518.

improvement of the interior water ways. Competition and loss of revenue begat a tendency toward combination among the railroads and the farmers were not slow to voice their disapproval.[29] During the high prices of the war period, the opposition to high freights in a measure declined.[30] The instinctive dread of monopoly had again been aroused, however, and was not to down. When at the close of the war the prices of farm products began to fall while rates on the railroads did not diminish accordingly, the storm of opposition broke out anew,[31] and

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[29] "The railroad companies of this State have a scheme for consolidation which should receive the attention of every man interested in the welfare of the State. If a company of perfect men could be found, such an arrangement would be more economical than the present. But, unfortunately, the people of Wisconsin have had some experience which must incline them to distrust the perfection of railroad men, if of nobody else, and it is presumable that they will not willingly put themselves in the power of so stupendous a monopoly as the one proposed." *Wis. Farmer,* **16:** 41. See *Trans. of State Agric. Soc.,* 1861–68, pp. 99–100.

See *Third Annual Rep. of Mil. and Prairie du Chien R. R.,* 1863, for arguments for consolidation; see *Ibid.,* 1866 for actual consolidation. See *Wis. Farmer,* **14:** 74, for complaint of high freights; also *Ibid.,* 61.

[30] See Periam, *The Groundswell,* 222–23, 225–26. In an article in the *Quarterly Journal of Economics,* **20:** 259–78, by Emerson D. Fite, it is pointed out that prices for agricultural products in the West in 1864 and the first part of 1865 were from 100 per cent. to 200 per cent. higher than in 1861 while freight rates for grain from Chicago via Buffalo to New York city were less than in 1861, when freights had undergone a sharp advance only to decline again. It is further asserted that this rise in the price of farm products was thus not only greater than the advance in freight, but lasted longer, to the resulting prosperity of the farmers. It must be remembered, however, that local rates on the grain-gathering roads west of Chicago and Milwaukee were not subject to the restraint of water competition and manifested a strong upward tendency.

See Martin, *History of the Grange Movement,* 316–17; see below, note 31, reference to Grosvenor.

[31] Periam, *The Groundswell,* 223 ff. Also *Wis. Farmer,* **14:** 61; Martin, *History of the Grange Movement,* Chs. XVII and XX.

In an article in the *Atlantic Monthly,* Nov. 1873, pp. 591–610, by W. M. Grosvenor, it is pointed out that while through rates and charges for long distances—in general from Chicago eastward—were not higher in 1873 than the rates of 1860, on the other hand, the published rates on the grain gathering roads west of Chicago and Milwaukee, where water competition did not exist and where inter-railroad competition was also at a minimum, which averaged only 1½ cents per 100 miles between western cities in November, 1860, averaged fully 2 cents for similar distances in 1873. The average charges on these western roads are said to have been 82 per cent. higher than the average on the great competing roads eastward—a difference disproportional to the difference in tonnage, and which had led to very great complaint in the West.

agitation for control by the state began to take shape.[32] Interest was again aroused in reference to transportation by water within the state and canal conventions were held at Prairie du Chien in 1868 and at Portage city in 1869, and a memorial presented to Congress in reference to the proposed public improvements centering at Green Bay.[33] It is significant that at this time attention was directed anew toward the possibility of building up manufactures and a home market,[34] and prophets again arose who taught that the way to solve the question of transportation was to transform the agriculture of the state.[35] In respect to complaints about inadequate facilities of transportation,[36] it may be noted that railroad construction had almost entirely ceased in Wisconsin during the period of the Civil War. During the decade 1859–1869, an average of only a little over 25 miles of railroad per year was built,[37] while the amount of grain to be transported had increased greatly on account of the development of Iowa and Minnesota. The railroads had

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[32] See Hibbard, 141, 142, with footnote references; see *Trans. of State Agric. Soc.*, 1869, pp. 133, 139; 1870, pp. 142, 145: 1873-74, pp. 55, 93.

See also *Wis. Farmer*, March 21, 1868, for an article on *Railroad Reform.*

For complaints of discrimination see the *Sparta Herald*, June 15, 1869; Feb. 20, 1870; also the *Beaver Dam Argus*, May 29, 1869. See also Martin, *History of the Grange Movement*, 1873, p. 379.

[33] *Trans. of State Agric. Soc.*, 1869, p. 73 ff. See also *Report on the Improvement of Rock River*, by legislative committee in 1867, and Wilson's *Report on the Survey of Rock River*, 40th Cong. 1st Sess., Ex. Doc. No. 15; see *Commercial and Financial Chronicle*, **16**: 207-8 (Feb. 15, 1873).

[34] *Trans. of State Agric. Soc.*, 1861-68, pp. 452-59; 1873-74, pp. 58-9, 359-65; 1875-76, pp. 380-81; 1876-77, p. 37. *Wis. Farmer*, **18**: 256.

[35] *Trans. of State Agric. Soc.*, 1872-73, p. 159; 1874-75, pp. 333-46. "The farmers of Green county have settled the question of railroad monopoly . . . Railroad charges ate up profits and the farmer was no better off than before. Then came the cry for cheap transportation and the subject of additional lines of railroads was agitated. Some of the farmers did not worry about transportation as they engaged in cheese making, and the cost of transportation of a pound of cheese is insignificant as compared with the cost of production, etc." *Hist. of Green Co.* (Union Pub. Co., Sprinfield, Ill., 1884), 414.

[36] See Table VII. In the article quoted by Grosvenor, referred to above (Note 31) the high cost of operating the railroads is said to have been due to the tariff—particularly in reference to the high price of iron—and that this led to high rates on local non-competitive traffic. The cure prescribed was more competition in transportation and this was to be secured by lowering the tariff and thus stimulating the construction of more railroads.

[37] "High prices of labor and material have necessarily retarded the building of railroads." *Rep. of Milwaukee Chamber of Com.*, for 1865.

gotten the situation yet more effectively under their control by "arranging their differences" and by actual consolidation.[38] High prices had stimulated the production of grain in the West in general, wheat in particular in Wisconsin, and the farmers with a great surplus of grain were absolutely dependent upon the railroads for transportation to furnish them the means of livelihood.

Under such conditions as these in the West generally, arose the "Granger" movement, the aims of which, apart from the desire for closer association among farmers, were the more specific ones of cheaper and more adequate transportation, opposition to railroad monopoly and to other combinations inimical to the interests of the farmer, and regulation and control of the railroads by the state.[39] Although the movement did not originate in Wisconsin, it is interesting in this connection because the Wisconsin phase of the general situation is intimately related to the system of exclusive cropping to wheat. In 1869, the farmers of Wisconsin produced 24.28 bushels of wheat per capita,—the highest yield per capita for any census period in the history of the state. The 42.5 bushels per capita of corn, oats, rye, barley and potatoes could bear transportation to a less extent even than wheat.[40] Of the 2.34 per capita of live stock in the state at the same period, 1.00 denotes the number of sheep. Of other live stock there had been no very considerable per capita increase since 1849 except in horses, and horses represented largely grain farming.[41] Milch cows had increased from 0.21 per capita in 1849 to 0.29 per capita in 1869, but as yet dairying had scarcely made a start in Wisconsin and was of less significance because of the existing depression in that industry. It thus happened that the only dependence of the Wisconsin farmer to any considerable extent for cash sales apart from wheat was upon the very moderate development of the wool growing industry. It

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[38] In 1866 the Milwaukee and Prairie du Chien railroad was absorbed by the Milwaukee and St. Paul railway. *Third Ann. Rep. of Mil. and St. Paul Ry. Co.* (for 1866).

[39] See Periam, *The Groundswell*, 196 ff, 223 ff, 236, 246, 260. Martin, *History of the Granger Movement*, Chs. xxiii–xxx.

[40] See Tables XI–XV.

[41] See Hibbard, 130.

must be granted that the farmers of a state which grows a surplus wheat crop amounting to nearly twenty bushels per capita, with practically no other industry to depend upon except a limited development of wool growing, are of necessity at the mercy of the railroads.

By referring to the table for the price of wheat at Milwaukee,[42] it is seen that wheat dropped from a maximum of $2.85 per bushel in April, 1867, to a maximum of $1.10 in April, 1869, and to a minimum of 73 cents in April, 1870.[43] By referring to the tables showing the average yield of wheat for the various years we note that the average for the state was lower just about this time than at any other period in the history of the wheat industry. When we recall still further that it was just at this time that the hop episode was ending with its round-up of ruin and disaster,[44] and that the tobacco crop amounted to less than one million pounds in the entire state in 1869 and was confined practically to Rock, Dane, and Walworth counties,[45] it begins to appear how absolute was the dependence upon the wheat crop, in a large portion of the state,[46] and how serious a situation high rates and inadequate facilities for transportation presented to the Wisconsin wheat farmer. We must conclude, then, that the Granger movement in Wisconsin had its ultimate origin[47]

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[42] See Table VIII. See also Tables IX and X for Chicago and N. Y.

[43] Note that the production of wheat in the U. S. increased from 173,000,000 bushels in 1859 to 269,000,000 bushels in 1869. See Table VI.

[44] See above pp. 59–60.

[45] See Table XXII for the production of tobacco.

[46] Some of the older counties in the southern part of the state had developed a much more diversified agriculture. See above pp. 66–7.

[47] In an address by President West, of the Milwaukee Chamber of Commerce, April 8, 1871, (*Rep.* for 1871, pp. 143–144) the idea was set forth that it was impossible to get transportation cheap enough to make exchanges of corn for eastern merchandise cheap. There was too much transportation and the remedy was to get producer and consumer closer together. Protection for manufactures was wanted, but it was protection from excessive transportation. In an article by Charles Francis Adams, Jr., in the *North American Rev.*, April 1875, p. 404 ff., the position was taken that the ultimate source of all the woe of the western farmers was that they had gone too far west; and that for this they were themselves chiefly responsible, as the "steady, reliable allies of that wretched land-grant and subsidy policy which did so much to stimulate the mania for railroad construction." It was asserted that this "hurtful forcing process" brought about over-production at remote points, and eventually the Granger movement, and that cheaper transportation would result to the benefit

in the government land policy and in the excessive culture of wheat, and we are prepared, after having thus examined the situation, to understand the animus of the Wisconsin farmer against the railroads and to make some allowance for the extremes to which that opposition was carried.[48] In the flush times that preceded the panic of 1873,[49] the rapidly increasing facilities for transportation were relatively not more ample than they had been before. On the contrary, there was especial complaint in reference to the wheat crops of 1872 and 1873 which were among the greatest ever produced in Wisconsin. High rates and discriminations continued as before.[50] With the decline in business after 1873, transportation facilities, in the meantime largely increased, were once more super-abundant and a demoralizing struggle for traffic took place among the railroads themselves, and between the trunk lines and the lake carriers, and while rates were lower, discrimination existed as before.[51]

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of the consumer and not of the producer, since the area from which production was possible was for all practical purposes unlimited. See also *Trans. of State Agric. Soc.*, 1874-75, p. 333 ff. for a similar view; also *Atlantic Monthly*, 1873, (July-Dec.) pp. 508-12, 708.

On the other hand, the position was taken by W. M. Grosvenor (in the article referred to above, note 31), that the outcry about a surplus of grain in the West was mere folly, and that the agriculture of the western and especially the northwestern states was of necessity confined to grain, as it was impossible for manufactures to be so developed in that section—without regard to natural facilities and resources—as to afford a sufficient home market. The surplus of cereals in the northwestern states was said to be due to the increasing population and cost of land which steadily drove the larger operations of agriculture to regions more remote from the centers of population, manufactures and commerce and to fresher and cheaper lands. It was accordingly asserted that the cost of moving the ever-increasing surplus of the agricultural states over a steadily increasing distance to points where it was needed to supply an ever-increasing deficit was a condition of agriculture in this country which it could not escape. The real truth lies somewhere between these two positions. See *Atlantic Monthly*, Sep. 1872, pp. 345-51 for a view somewhat different from either of the two presented above.

[48] See *Trans. of State Agric. Soc.*, 1875-76, p. 72 ff. for a strong arraignment of the railroads.

[49] To the same government land policy working out its effects in the farther Northwest can be ascribed in large measure the panic of 1873.

[50] "In 1872 somebody raised the rates from the West 5 cents per cental. His act cost the farmers millions of dollars. Is it strange that our greatest industry grows restive under fluctuations which it can neither foresee nor comprehend?" Grosvenor, *supra*. See also *First Annual Rep. on the Internal Commerce of the United States*, (1875-76) pp. 180-82.

[51] See *Trans. of State Agric. Soc.*, 1880-81, p. 309 ff. Also Hibbard, 142.

Under the influence of various causes[52] of which the question of transportation was not the least, the agriculture of the state underwent a marked change during the decade. The area of improved land increased nearly 60 per cent. and population increased about 30 per cent., while the acreage sown to wheat increased but slightly.[53] The per capita yield of wheat decreased to 18.92 bushels, while other crops increased to a combined per capita yield of 63 bushels,—chiefly corn, oats, and barley. Live stock increased to a combined total of 3.00 per capita,—the largest at any census period in the history of the state.[54] The number of sheep remained unchanged, so that the increase was in other kinds of live stock entirely. The development of the dairy industry was reflected by the increase in the number of milch cows from 0.29 to 0.36 per capita, but the increased yield per cow must also be taken into consideration. There was a large increase in the cultivation of tobacco, particularly in the southern part of the state, where wheat declined markedly, and especially in Dane and Rock counties.[55] The tendency away from wheat and toward diversification in agriculture was thus marked[56] and if under these circumstances the agitation in reference to transportation was less strenuous as time went on, the inference is plain that under the changed conditions the farmers of Wisconsin were to a less extent at the mercy of the railroads, and largely so because they had turned their attention to pursuits in respect to which transportation was not so important a factor.[57]

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[52] See Chapter X.

[53] See Table IV, for estimates of U. S. Dep. of Agric.

[54] Sheep have declined since and stock worth more per capita have taken their place. The number of live stock in Wisconsin was greater per capita in 1900 if we include cattle under 1 year.

[55] See Table XXII.

[56] See *Trans. of State Agric. Soc.*, 1879-80, pp. 21, 22, for a statement of the changed conditions.

[57] See, however, for later complaint in reference to railroads the speech of Senator H. A. Taylor, March 20, 1889, on Senate Bill No. 19, to regulate railroad traffic. See *Arguments* before the Railroad Committees of Wisconsin State Legislature, having under consideration Bill No. 195, to regulate railroad traffic. [Published in accordance with Joint Resolution, No. 16, Senate (1889)]. Later agitation in reference to railroads in Wisconsin has had to do in general rather with public control and matters of taxation, than with inadequate facilities and high freights.

In this growth in diversification of industry which placed the farmer in a more strategic position in reference to the railroads, what part did the railroads, apart from other assignable causes, play? We have more than once had occasion to note the fact that, according to all testimony, the first effect of the railroads was to give an impetus to the excessive culture of wheat.[58] Exploitation of the soil of Wisconsin was greatly accelerated by the improved system of transportation, although that excessive culture had its origin in other causes.[59] Inspection of the railroad map, showing the construction for the different decades, and comparison with the charts representing the development of the wheat area and with the table denoting the degree of specialization, prove that for the state, as a whole, the railroads had little influence after 1869 in increasing the tendency toward excessive culture of wheat. The increase in total mileage of railroads in Wisconsin from 1869 to 1879 was the largest of any decade in the history of the state,[60] and was confined chiefly to the newer portions of the state. But we have just seen that there was a decline in wheat and a marked tendency toward diversification in the state, as a whole, during the decade. In the central portion of the state, where railroad construction was large for the first time, there was a considerable decline in the growing of wheat. In St. Croix and Buffalo counties there was a decline in wheat growing, though there, too, for the first time railroad construction was important. In Polk, Barron, and Eau Claire counties, with similar railroad construction, wheat increased in importance with the advent of railroads, while Chippewa and Dunn counties, under similar circumstances, about held their own. In the eastern section of the state, the large increase in railroad construction during the decade was attended by a general increase in the importance of wheat.

[58] See above, note 22. Compare again the chart of the wheat area in 1859 with the railroad map; also compare the tables denoting the degree of specialization in wheat in the various counties at the different periods, with the railroad map showing the construction of railroads during different decades.

[59] For a discussion of the *Influence of railroads on wheat producing*, see *U. S. Agric. Rep.* for 1862, pp. 68-9.

[60] See Table VII.

The explanation seems to be somewhat as follows: railroad transportation had already exercised its influence in the southern counties, and in the river counties, which had enjoyed the advantages of the railroads farther south by means of the river. In the northern, interior counties, which were more isolated, the clearing away of the timber and the advent of the railroads, together gave an impetus to wheat growing.[61] In the interior of the state, the soil was unfitted for wheat growing and the tendency during the decade was toward rye and potatoes rather than towards wheat.[62] In the eastern section, the timber had been cleared away to a considerable extent and railroads for the first time exercised their full influence upon wheat growing. In all of these counties where wheat increased with railroad construction, there was marked decline in wheat in the following decade, though the construction of railroads continued at the same time important. The conclusion to be drawn from all this is that the effect of the railroad upon the wheat industry was two-fold: in the first place, directly and immediately toward specialization in wheat; in the second place, the effect was ultimately and indirectly toward diversification. The indirect and ultimate influences remain to be discussed. In the first place, the added impetus given to specialization in wheat accelerated the exploitation of the soil and, consequently, hastened the time when rotation of crops and diversification had to be taken up. This is shown by the fact that the rise and decline of the industry was most extreme in those counties where, on account of the absence of forests, the railroads could have their full and immediate effect.[63] In so far as railroads reduced the cost of transportation, their effect was to bring back into cultivation land upon which the yield had so declined or on which the cost of production had become so high that it was

[61] In many of the interior counties, a home market is spoken of as absorbing all the wheat, but an inspection of the table for per capita yield shows that this is improbable. Compare, for example, Eau Claire county.

[62] See above p. 79.

[63] *Cf.*, for example, Richland and St. Croix, neither of which had railroads within their boundaries previous to 1870, but both of which had similar advantages of transportation near at hand. Compare Dane with Calumet; or compare Monroe and Pierce.

no longer profitable for the culture of wheat. Exhaustion of the soil could thus be carried farther. Undoubtedly, the influence of the railroads in this respect was very great in the older counties. In so far as railroads caused a rise in the price of land, their effect was to ultimately favor the pursuit of some other industry less expensive in land than the culture of wheat. Such an effect was probably very considerable, though not immediate. It would not ordinarily come into operation until the land had passed out of the hands of the original holder who would, of course, capitalize, in the selling price, any added earning power which the building of the railroad might give to the land. There is yet another way in which the railroad tended to encourage and bring about diversified industry. We speak here of the educational and broadening influences of the railroad. The railroad brings newspapers and the telegraph. It encourages travel and makes men more intelligent, more thoughtful and less satisfied to move in the old ruts. Anything that tends to overcome habit, inertia, and indifference to one's condition must make mightily for a change to a better condition. Such an influence is the railroad and that influence in Wisconsin, as elsewhere, has been very great. If the wheat farmers of Wisconsin were disappointed in the extent to which the railroads served them, yet it is largely due to the civilizing agency of the latter that a class of farmers was developed sufficiently intelligent to create an agricultural industry so rich and varied as that of the present.[64]

The railroad ultimately brings the farmers closer together, too, and enables the latter to wage a more equal contest with the former. Railroads combine, because combination is easy,—is, in fact, unavoidable. Farmers do not combine, because, for them, combination is almost impossible.[65] In this fact lay one reason why the dairyman succeeded where the wheat farmer failed. The

[64] Periam, *The Groundswell*, 443-46.

[65] See editorial in the *Northwestern Miller*, Sept. 18, 1885, (p. 268) for the statement that farmers could not hold their wheat, as they had no organization and could not form one; that one-half, or even more, of the farmers of this country and Europe would be compelled to sell before Dec. 1, and that fully nine-tenths must sell not later than January.

former not only produced a product that would stand transportation for a long distance, but organization was possible to the dairymen, on account of their fewness of number, superior intelligence, and the co-operative nature of their industry, and necessary to them on account of the obstacles to be overcome. No one can follow the development of the dairy industry in Wisconsin and not recognize how much organization, both in reference to production, transportation, and markets, has had to do with the success of that industry.[66] On the other hand, no one can study the wheat industry and not be impressed with the almost utter inability of the wheat farmers to associate themselves for their common interest.

If the wheat farmer depended upon the railroads in the early period of the wheat industry, it is no less true that the early railroads were almost absolutely dependent upon the farmer, and, particularly, upon the wheat farmer. The early railroads in Wisconsin were at first simply devices for getting wheat to market. A failure in the wheat crop meant serious, almost total loss of revenue; it meant the loss of the revenue on the wheat itself and it meant, further, the loss of the freight upon the commodities for which the wheat farmer exchanged his commodity. The following table shows how largely the railroads depended on wheat for their traffic.

Road.	Date.	Total Tonnage East.	Wheat and Flour Tonnage	Per cent Wheat.
Mil. and Horicon,*	1856	11,369	10,723	94
Mil. and Mississippi	1852	12,905	8,528	66
Mil. and Mississippi	1853	35,000	25,408	73
Mil. and Mississippi	1854	63,826	41,089	64
Mil. and Mississippi	1855	81,720	63,523	78
Mil. and Mississippi	1856	63,216	48,474	77
Mil. and Mississippi	1857	71,824	54,307	76
Mil. and Mississippi	1858	98,576	76,948	78
Mil. and Mississippi	1859	97,198	76,200	78

* 10⅔ months.

[66] See below pp. 168–9.

Road.	Date.	Total Tonnage East.	Tonnage Wheat and Flour.	Per cent Wheat.
La Crosse division of Mil. and St. P. Ry.	1869	398,854	316,256*	79.8
Prairie du Chien division Mil. and St. P. Ry. (Mil. and Miss. Ry.)	1869	339,188	274,049*	80.8
Iowa and Minn. Division Mil. and St. P. Ry.	1869	208,317	135,267*	66.5
Mil. and St. P. Ry. as a whole	1869	941,354	725,573*	77.1
Chicago, Mil. and St. P. Ry	1885	3,468,305	1,295,875*	37.4
Chicago, Mil. and St. P. Ry	1900	17,757,419†	2,310,788*	13.0

In 1858, 79 per cent. of the entire revenue on the Milwaukee and Missisippi railroad was derived from the carriage of wheat and flour, and in 1859, the proportion was 77 per cent. This was largely in excess of expectations.[67]

The following table shows the number of bushels of wheat produced to every mile of railroad at the different census periods in Wisconsin:

1859.....18,613 bushels of wheat produced to 1 mile of railroad.
1869.....22,442 bushels of wheat produced to 1 mile of railroad.
1879..... 8,551 bushels of wheat produced to 1 mile of railroad.
1889..... 2,171 bushels of wheat produced to 1 mile of railroad.
1899..... 1,390 bushels of wheat produced to 1 mile of railroad.

These figures[68] show the extent to which the railroads must have depended upon the wheat industry within the state in

* Total wheat, flour, and mill feed.

† Total tonnage, east and west, as tonnage east is not given separately. The proportion of the tonnage of wheat, flour and mill feed to the total tonnage on the C. M. and St. P. R. R., in 1885 was 20 per cent.; on the Milwaukee and St. Paul Ry., in 1869, the similar proportion was 53.9 per cent. and on the Milwaukee and Mississippi in 1859, 47.5 per cent. The increase in the proportion of wheat and flour (mill feed is negligible) to total traffic, from 1859 to 1869, was probably due to the fact that a large proportion of the wheat came from Minnesota and Iowa and does not necessarily indicate an increasing dependence of the railroads upon wheat growing in Wisconsin. Of the 9,077,591 bushels carried on the La Crosse Division in 1869, over 52 per cent. was shipped from the city of La Crosse, and on the Prairie du Chien division, of the 4,851,875 bushels carried, over 64 per cent. was shipped from the city of Prairie du Chien.

Statistics for the La Crosse and Milwaukee R. R., in 1859, are not available.

[67] It was estimated in the *Report* for 1851 that wheat would furnish as much revenue as all other exports of any kind whatsoever.

[68] If we accept the state statistics of a crop of 27,316,306 bushels in 1860, then there were produced in that year 31,016 bushels of wheat to every mile of railroad in the state.

their early history and the marked extent to which that dependence has disappeared. That this almost complete dependence of the early railroads upon wheat was a bad thing for the railroads as well as for the farmers is easy of demonstration. Upon the fickleness of the season, and that in respect to one crop, rested the prosperity of the railroads. Further, the movement of wheat was seasonal, demanding extraordinary facilities at certain periods, with a great decline in traffic at other periods. This resulted in uneconomic use of equipment. Fluctuations in the price of wheat emphasized this unsteady movement of traffic. This unreliability and irregularity in respect to the wheat crop and its transportation was an important cause of unstable financial conditions in the state during the wheat period. Wisconsin is still preëminently an agricultural state and between the farmers and the railroads there is very great mutual dependence.[69] But thanks to a diversified agriculture, both the farmer's activities and the railroad's equipment are more economically utilized and no single vicissitude of season or of market can threaten the prosperity of either farmer or railroad.

[69] See *Third Ann. Rep. Mil. and Prairie du Chien R. R.* (1863); also, *Trans. of State Agric. Soc.*, 1881-82, pp. 49-50.

CHAPTER X

OTHER CAUSES OF THE DECLINE IN WHEAT GROWING IN WISCONSIN AND OF THE CHANGE TO OTHER FARM PURSUITS

In the preceding two chapters, the position is taken that the most important and most ultimate of the causes operating both in the rise and in the decline of the wheat industry in Wisconsin, as elsewhere, was the existence of cheap, fertile lands—first, within that state, and then beyond its borders—supplemented by the introduction of railroads—first, into Wisconsin, and then into the new regions beyond.

Of the other causes operating in the same direction, the most potent and that most commonly asserted to be the primary cause of the decline of wheat growing in Wisconsin was exhaustion of the soil, induced by exclusive cropping to wheat with little or no rotation and by other reckless and wasteful methods of cultivation, and leading finally to declining yield such that wheat growing became unprofitable. The early accounts of agriculture in Wisconsin make frequent reference to the great productivity of the soil. Extraordinary yields of wheat and other crops were reported and an impression created that the soil was of inexhaustible fertility. By about 1845, however, as a consequence of the methods of soil exploitation followed, there began to be heard general complaints of declining fertility and lessened yield. Warnings against the system of land skinning which was practiced were disregarded, and as a result there were continued complaints which called forth further warnings. It is significant that these complaints and warnings thus began in Wisconsin before the wheat industry had really commenced to assume great importance, and con-

tinued throughout the whole period during which wheat was dominant.[1] It is very difficult to criticise the correctness of this assertion of declining yield. There can be no doubt that new land generally yielded more than land that had been cropped to wheat for a series of years.[2] How great that decline in yield was and how soon the high yield on new land began to decline materially is, however, difficult to determine. It would seem that if decline in yield had taken place universally to the extent asserted, the wheat industry must have been driven from the state before it was fairly started. If one can judge by the average yields for the different counties and for the state as a whole at the various periods for which the data are available, the conclusion is irresistible that, excluding the abnormal years 1860 and 1864,[3] the decline in yield has been somewhat overstated. Reference to the chart with the curve representing the trend of the average yield for the state as a whole shows no such extreme decline as is generally asserted.[4] Nor is a decline in yield in the older portions of the state overbalanced by the influence of higher yields in the newer sections of the state, for inspection of Table V shows that the average yield in the newer counties has not been higher than

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[1] Within recent years there has been a concensus of opinion that crop yields have increased and this increase is usually ascribed to the improvement of the soil due to better methods of cultivation and to the introduction of the live stock industry—especially dairying.

[2] See *Trans. of State Agric. Soc.*, 1853, pp. 151-52, where it is stated that in 1853 the yield of wheat on new land had been twenty-five to thirty bushels per acre, while in the same neighborhood farms that had been cropped continually for ten or twelve years and with buildings attached valued from $5,000 to $10,000 had yielded not more than one-half the quantity of grain that the new farms did. A similar assertion is made in the Pat. Office Rep., *Agriculture*, 1850-51, p. 8, in reference to Walworth county, that the yield was twenty-five to thirty bushels on new land and "after the first crop usually less except on clayey land which yields more the second and third crop than the first crop."

[3] The crop of 1860 was abnormal in yield, while chinch bugs and drouth injured the crop of 1864.

[4] See Figure 7, with curve, based on the figures given for the average yield of the state by the U. S. Dep. of Agric.; see also Table V.

in the older counties.[5] It may be further objected, however, that the average yield for a particular county represents the result obtained by combining the high yields of the land newly brought into cultivation with the low yields of the older and more exhausted lands. This may to a certain extent be admitted, but the more rapid increase of improved land in the newer counties ought, on that theory, to be reflected in a higher average yield in the new counties as a whole, which, as we have just seen, is contrary to the facts. A further objection may be raised that the land in the older counties falling below a certain minimum yield would be successively withdrawn from cultivation to wheat, thus continually relieving the average yield for that county from the minimizing influence of very low yields. This objection must be deemed in part valid. During the decade 1850–1860, wheat declined in importance in Walworth, Kenosha, and Racine counties while there was an increase in live stock, but no general increase in other crops. Accordingly we are warranted in assuming, in consideration of the complaints in that section in reference to declining yield in the wheat crop, that it was the lands affording less than the average yield in wheat that were in general withdrawn from cultivation and devoted to stock raising. It would be a fallacy, however, to conclude from this that it was always the poorest land, absolutely speaking, that was withdrawn from wheat; for this involves the assumption of the absence of other, and under the then conditions, more profitable competing crops or farm pursuits, to which the better as well as the poorer land might be devoted. We have seen too that it was just as likely to be

[5] Compare, for example, the average yields in Buffalo and in Rock counties. Wheat has persisted in a remarkable way in the former county, while it was replaced by other crops in the latter county at a comparatively early date. Or, comparison may be made between Kenosha and Iowa counties. The first decade, it has been seen, showed a considerable decline in wheat growing in the former county and this was succeeded by further decline during the following decades. Iowa county, on the other hand, did not attain the maximum importance in wheat growing until 1860. But on the whole average yields were not higher in Iowa than in Kenosha county. Comparison of Dane and St. Croix counties, however, is in favor of St. Croix.

the owner of the poorer soil who was not in the financial position to make the change.[6]

On the whole, however, and in view of these considerations just mentioned, we are not justified in running counter to almost universal contemporaneous testimony and concluding that there was small decline in the per acre yield of wheat and that that decline could therefore have had little influence in displacing the growing of wheat. On the other hand, it does not seem possible to assign to that cause the amount of importance usually given to it.[7] The real state of the case seems to be as follows: there was an actual and very considerable decline on new lands, after the first few crops, due chiefly to the crude methods of cultivation that were followed. This decline was so rapid that the new counties did not long show a higher average yield on the whole than the older counties. Thereafter the yield per acre was not essentially larger in the new than in the old counties, but was secured with less expense for two reasons: first, because the land being newer was relatively more productive, and involved less expense for cultivation, and in the second place, because of the low cost of the land itself. On account of these two reasons, there might be more prosperity and growth in the wheat industry on the newer, more fertile and cheaper lands, while in the older sections where land was higher and an equal yield was obtained only at a higher cost on account of the higher value of the land and the greater expenses of cultivation, depression and decline might exist; and this might occur and probably did occur with the average yield per acre not generally higher on the comparatively new than on the old lands. As suggested above, the more rapid increase of improved land in the newer counties would be offset in part by the withdrawal from cultivation to wheat of the lands giving on the whole lower than the average yields in the older counties and their disposal to the uses of some other farm pursuit. In a word, not so much declining yield, as the obtaining of

[6] See *Trans. of State Agric. Soc.*, 1877-78, p. 101.

[7] This suggestion has already been made above in reference to the asserted great decline in yield in some parts of the state about 1870. See p. 133.

about the same yield only at a greater cost on the older lands was the immediate cause of the depression in certain sections that finally led to the abandonment of wheat growing.[8] This is the only way we can explain the confusing and contradictory expressions that were uttered almost in the same breath, of soil exhaustion and decline in yield on one hand, and of large yields on the other. It enables us to understand why we hear, on one hand, that wheat growing doesn't pay, that it costs more to grow than it will bring in the market and, on the other hand, that it is the staple of the state, and brings in more money than any other crop, that it is profitable, and that so long as it continues so profitable there is little hope of inducing farmers to abandon it. On this supposition we can harmonize the maledictions hurled at exclusive cropping of wheat, with the grateful acknowledgment that the wheat crop has built barns, paid off mortgages and purchased the necessities of life.[9] And all this is consistent with the fact that the average yield was not materially different in different parts of the state.

While the yield was not ordinarily much smaller in the older parts of the state, the devastation wrought by insect pests, particularly by the chinch bug in the more southern counties, must be given due weight in the displacement of the crop in that section. The chinch bug was in especial evidence in Wisconsin in 1864–66, 1874–77 and in 1887 and succeeding years. Inspection of Table V shows the effect in the greatly lessened yield in many counties in 1864, 1877, and 1889.[10] Not only on account of the actual losses did the depredations of the chinch bug tend to drive wheat out of cultivation, but also because

[8] Note that average yields in Minnesota and the Dakotas were not high after the first few years. It is not far wrong to say that any great wheat producing region is a region of low yields, and that not because of low fertility but because *extensive* cultivation under the condition of cheap and fertile lands is found profitable. See an article in the *Quart. Journal of Econom.*, 18: 570, by C. W. Thompson, *The Movement of Wheat Growing: A Study of a Leading State,* in which the author similarly concludes from a study of wheat growing in southern Minnesota that not to loss of fertility but to diversified agriculture, to greater profit in dairying and to greater profit in wheat growing by *extensive* cultivation on cheap or low rent lands, is due the westward movement which carried that industry out of that section of the state.

[9] See above pp. 25, 73.

[10] See above pp. 58, 72, 84, 88–9.

it was necessary to pursue a system of crop rotation and cessation of wheat growing in order to stamp out the pest.[11] The chinch bug was a factor together with the recurrence of bad seasons and low prices, that tended to make the wheat growing industry less certain of affording remunerative returns.

It has been pointed out above[12] that when the first great break in wheat growing came in Wisconsin, in the decade 1870–1880, there was a tendency toward general farming rather than toward specialization in any particular branch of farming. This tendency was partly a cause and partly a result of the decline in wheat growing. Decreasing profitableness in the wheat crop was accompanied by increasing profitableness in a more diversified agriculture. As has been pointed out over and over again frontier conditions of cheap land, scarce labor and dear capital favored wheat growing and rendered diversified agriculture unprofitable. With the passing of these early conditions, the situation was reversed. It is almost an axiom of political economy that round-about methods of production are more profitable so soon as sufficient labor and capital can be commanded for such operations. But for a people to pursue such methods successfully requires much capital, highly intelligent labor and directive capacity, and favorable conditions in industry generally. In the most concrete way, these requirements and conditions were lacking in the early history of wheat growing in Wisconsin but began to be more and more present as frontier conditions passed away. A simple frontier economy has few wants and thus presents narrow market opportunities, and this constitutes a reactive cause

[11] Inquiry of several residents of Dane county as to why wheat growing had been discontinued brought the reply "Chinch bugs." A similar answer was received in St. Croix county, as a partial reason for the discontinuance of wheat growing. It was asserted that wheat growing imperiled other grain crops, since the chinch bug seemed to need some wheat to persist, but when once present was destructive of other grains too. The method of sowing wheat and oats or some other crop together was found more or less effective in avoiding the ravages of this pest. See above, note 10, for reference to the ravages of the chinch bug in the latter part of the eighties, which in connection with the declining price almost drove wheat growing from the county. See *Trans. of State Agric. Soc.*, 1882–83, p. 272 for reference to chinch bugs in Green county; also *Hist. of Fond du Lac Co.* (West. Hist. Co., 1880), 413.

[12] See p. 79.

operating against diversification. With a higher standard of living and more complex wants, the industry of a people is readjusted and becomes more complex, and this is the more apt to be true if some great industry upon which dependence was formerly placed becomes unprofitable, as was the case with wheat growing in Wisconsin. The introduction of live stock afforded an opportunity for the raising of other grains and farm crops, which would not stand transportation except when converted into beef, mutton or pork. Rotation of crops became possible with resulting benefit to the soil, and when followed to a rational extent made the more economical use of labor and machinery possible by distributing the former throughout the year and the latter over a longer season.[13] The keeping of live stock also enabled the farmer to make profitable use of otherwise waste land and waste products,[14] as well as to raise larger crops per acre on land the fertility of which had been thus restored.[15] It was no small matter either that the farm income no longer depended upon a single crop and that an uncertain one. Great gains and great losses were both less frequent and agriculture thus became less speculative and more planful.

The part played in the spread of the wheat industry by improved harvesting and other machinery has already been pointed out.[16] The great profitableness of the wheat crop on the new and fertile lands of the West, together with the scarcity of labor there, stimulated the early improvement of machinery for the growing of wheat beyond that for the growing of other

[13] *Farm. Inst.*, (Wis.) *Bulletin* No. 20, p. 21. *Trans. of State Agric. Soc.*, 1886, p. 227; 1875-76, pp. 330-31; 1876-77, pp. 23-24. *Wis. Farmer*, 15: 177. See *Ninth Annual Rep. Wis. Dairymen's Assoc.*, p. 38 ff., for unfavorable attitude toward mixed farming. The fact of better utilization of farm labor and machinery in diversified agriculture was brought out in conversation with a man who had been aquainted with conditions on the farm for thirty years in St. Croix county. The use of the same machinery in the harvesting of crops which mature in succession was given as an illustration. On the other hand excessive diversification requires too much machinery. See *Farm. Inst.*, (Wis.) *Bulletin* No. 19, p. 57.

[14] *Trans. of State Agric. Soc.*, 1886, p. 227; 1887, p. 1.

[15] *Farm. Inst.*, (Wis.) *Bulletin* No. 5, p. 45.

[16] See above pp. 62-3; also *Trans. of State Agric. Soc.*, 1874-75, p. 181 ff; Kessinger, *History of Buffalo County, Wis.*, p. 372; *Wis. Farmer*, 9: 381.

crops.[17] Later more rapid improvements in machinery for the raising of other crops have tended to reduce the relative advantage which wheat held over the latter in that respect.[18] Improved harvesting machinery for wheat was throughout the wheat period also often bought recklessly and cared for scantily with consequent financial difficulties, which, as we have seen, tended to keep the farmer in the rut of wheat raising.[19]

After a time the tendency toward diversified agriculture which had in large measure displaced wheat growing in Wisconsin, gave way in its turn to a reaction toward more specialized forms of farm industry again. The growing of wheat, however, continued to decline as before, since the newer conditions were more and more unfavorable for that crop.[20] Of these specialized forms of industry, the growing of tobacco and dairying were the most important.[21]

The early attempts to introduce the culture of tobacco have been already referred to.[22] The slow progress in this direction for many years was due simply to the fact that the conditions that favor wheat growing are unfavorable for the cultivation of tobacco. The briefest attention to the essential differences in the character of the two industries shows why this is so; for

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[17] *Trans. of State Agric. Soc.*, 1887, pp. 38-49; 1882-83, p. 27. *Farm. Inst.* (Wis.), *Bulletin* No. 10, p. 243.

[18] Compare cultivators for hoed crops, in general, machine corn, tobacco and potato planters; corn cutters, huskers and shredders, potato diggers, etc. The silo method of utilizing corn and other forage crops may be cited as a somewhat analogous later improvement and has particular significance in a state where the season is neither sufficiently long nor the climate sufficiently warm in large areas to bring the corn crop to full maturity.

[19] *Farm. Inst.*, (Wis.) *Bulletin* No. 19, p. 57 ff.; *Trans. of State Agric. Soc.*, 1874-75, pp. 186-96; Martin, *History of the Grange Movement*, 385.

For a discussion of the relation between harvesting machinery and the size of the most economical wheat farm see the article referred to above [note 8], by C. W. Thompson.

[20] See above pp. 87-8; also *ibid.*, note 7, where the inability of the farmers of Wisconsin to raise cattle in competition with the cheaper range lands to the west and southwest was pointed out. [See *Trans. of State Agric. Soc.*, 1879-80, p. 211.] A similar statement may be made with reference to the sheep industry. Further, a large part of Wisconsin lies too far outside the great corn belt to enable the farmers of that state to participate largely in the production of corn-fed beef and pork.

[21] The raising of potatoes, barley and sugar beets constitute other less important examples.

[22] See above p. 31, also Hibbard, *Hist .of Agric. in Dane Co.*, 160-75.

the successful cultivation of tobacco requires, relatively, a minimum amount of land, highly intensive culture, considerable intelligence of a special kind and much labor and capital. Quantitatively speaking, nature does little and man, much, in the culture of tobacco. These considerations are sufficient to account for the late development of the tobacco growing industry in Wisconsin.[23]

Somewhat similar conditions prevented the rise of dairying to importance in earlier days, though instances are not wanting in which unfavorable conditions were overcome under the stimulus of the early failure in the wheat crop.[24] Capital, however, was lacking for the purchase of cows of good quality and for the erection of barns and fences.[25] The quality of the early butter and cheese was very inferior. on account of lack of proper facilities for making and on account of lack of skill.[26] Further, the chief markets in the lake cities were already supplied by dairy products of approved quality—particularly from Ohio.[27] In the interior portion of the state at least, facilities for transportation were lacking; for it must be remembered that if dairy products on account of high specific value can bear transportation a long distance at relatively low cost, nevertheless that transportation must be rapid and afforded under such conditions as will insure arrival without deteriora-

[23] See Hibbard, *supra*. The most hasty reference to the facts set forth by Hibbard in reference to tobacco culture shows how impossible it was for that crop to occupy any place in the early agriculture of Wisconsin.

[24] See above p. 31. See Hibbard, 176–77; Pat. Office Rep., *Agriculture,* 1852–53, pp. 327–35., including a statement by a man in Rock county that he had milked thirty-five cows during the previous season and had been in the dairy business for the preceding seven years. See *Prairie Farmer,* **10**: 74–5.

[25] See above p. 49. These difficulties were doubtless partly imaginary, but Hibbard [p. 177] goes too far in their disparagement. See *Sixth Ann. Rep. Wis. Dairymen's Assoc.,* 97.

[26] The quality of the early wheat in Wisconsin was on the contrary very superior. Good butter or cheese does not *make itself,* as good wheat *grows itself* on rich adaptable soil.

"Few that are handling cows know their business." Ex. Governor W. D. Hoard, *Fifth Ann. Rep. Wis. Dairymen's Assoc.,* 32.

[27] *Seventh Ann. Rep. Wis. Dairymen's Assoc.,* 29.

"Then (1850) we had to peddle our products to such purchasers as could be found or induced to buy—five or six cents a pound being thought a good price for it." *Second Ann. Rep. Wis. Dairymen's Assoc.,* 9.

tion in quality.[28] Still further, there was a general impression that Wisconsin lay outside of the dairy region—due in part to misapprehension and in part to the evil reputation of Wisconsin butter and cheese.[29] Most of all, the profitableness of wheat growing and the characteristic conservatism, and indisposition of the wheat grower to change the nature of his operations prevented the earlier growth of the dairy industry.[30]

The extreme depression in the wheat industry, however, which followed the war, and the high prices for dairy products during the same period finally resulted for a time in a considerable development of dairying, in certain parts of the state, which was also made possible in large measure by the introduction of refrigerated transportation about the year 1868.[31] Resulting overproduction led to depression and this in turn to the organization of the Wisconsin Dairymen's Association in 1872, from which time dates a new era in dairying within the state.[32] The Association at once took steps to secure a better quality of product, to extend the breadth of the market, to secure more favorable rates of transportation and, in a word, to secure the coöperation of dairymen in general for the good of the industry as a whole.[33] A good illustration of this policy was afforded when at the annual meeting of the Association in 1879, a resolution

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[28] *Trans. of State Agric. Soc.*, 1879-80, pp. 220-21.

[29] See *Seventh Ann. Rep. Wis. Dairymen's Assoc.*, 27. "The climate was not auspicious, the wild grasses resulted in a disagreeable flavor and the soil would not produce tame grass successfully. Further the water was bad." See *Trans. of State Agric. Soc.*, 1852, pp. 228-37; 1851, pp. 178-79.

[30] "It is harder and takes longer to convert the farmer than it does the farm to dairying." *Fifth Ann. Rep. Wis. Dairymen's Assoc.*, 30. See also *Trans. of State Agric. Soc.*, 1882-83, p. 272.

Indifference toward dairying near Columbus, Columbia county, a few years previous to 1890 was said to have been due to the ability to raise twenty to twenty-five bushels, and above, of wheat to the acre. *Eighteenth Ann. Rep. Wis. Dairymen's Assoc.*, 50.

[31] See above p. 67. See Hibbard, *Hist. of Agric. in Dane Co.*, 178; *Second Ann. Rep. Wis. Dairymen's Assoc.*, 22; *Eighth Ann. Rep.*, 32-4.

[32] *Second Ann. Rep.*, 9; *Seventh Ann. Rep.*, 128; *Trans. of State Agric. Soc.*, 1871, p. 4.

[33] *Seventh Ann. Rep. Supra.*

"Dairymen have an advantage on freights . . . When a car-load of wheat in New York would be worth from $500 to $600, a car-load of cheese would be worth nearly $3,000, and a car-load of butter $7,000 to $8,000." *Second Ann. Rep.*, 12. See *Ibid.*, 2. Also *Trans. of State Agric. Soc.*, 1888, p. 181.

was passed recommending to the dairymen of the state that in view of the overcrowded state of the cheese market and the higher relative price of butter, they defer making cheese in the coming spring as late as possible in order to relieve the market to that extent at least.[34] The Association also lent its active influence toward extending the dairy industry into new regions within the state where conditions were ripe for a change from wheat growing.[35] It is not too much to say that a large measure of the prosperity which followed in dairying was due to the intelligent and persevering efforts of the Association, and their activities have been thus referred to at length in order to emphasize the contrast between the absence of effective organization among the large mass of plodding wheat farmers and the part played by the compact organization of a few intelligent dairymen in reviving their industry from the depression into which it had fallen and lifting it to a new plane of progress. The dairymen, to be sure, had a great advantage: they labored in behalf of a live industry while the wheat farmers clung to a pursuit fast falling into decadence.[36]

These elements of decadence in the wheat industry have been sufficiently set forth. It remains to point out the remaining superior advantages of dairying. One of the most important of these is the great natural adaptability of a large part of Wisconsin to dairying. Partly as a result of the united efforts of the dairymen of Wisconsin for a higher standard of quality and partly as a result of the development of refrigerated transportation, their products were soon recognized to be as good as the best.[37] There is no longer any question of the highly favorable natural advantages for dairying in Wisconsin.[38] On the other hand,

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[34] *Seventh Ann. Rep.* 101.

[35] See *Farm, Inst.,* (Wis.) *Bulletin* No. 6, p. 153.

[36] Hibbard, *Hist. of Agric. in Dane Co.,* 178.

[37] See *Rep. Ind. Com.* (1900), **10**: 187; testimony of Mr. Le Grand Powers, Chief, Divis. of Agric., *U. S. Census.* The reputation of the dairy products of Wisconsin for high quality suffered some decline a decade or more ago with a consequent loss of market, on account of the deterioration caused by the manufacture of "filled cheese." See discussion in *Reps. of Dairymen's Assoc.,* 1894–96.

[38] See *Trans. of State Agric. Soc.,* 1886, p. 83; *Fifth Ann. Rep. Wis. Dairymen's Assoc.,* 29–33; *Bulletin of Agric. Exper. Stat., Univ. of Wis.,* No. 88, (Sept., 1901) pp. 4–6; *Ibid., Bulletin* No. 140 (Sept., 1906) pp. 10–17. Also *Farm. Inst.,* (Wis.) *Bulletin* No. 9, p. 219.

large portions of Wisconsin are for reasons already pointed out no longer adapted to specialized wheat growing. Continuous cropping to wheat has been seen to be destructive to the fertility of the soil while dairying is a restorative industry in that respect, and is thus self-perpetuating.[39] Dairying also affords a more certain revenue, while in respect to wheat growing the profits of good crops are often overbalanced by the losses involved in a succession of poor crops.[40] In the long run, therefore, dairying proves the more profitable pursuit. This fact, together with the restorative influence upon the fertility of the soil, results in higher values for land where the latter industry is followed.[41] Wheat growing is thus not able to compete with dairying for possession of the land in Wisconsin. Wheat suffers further from the competition of those grain and forage crops which are subsidiary to dairying and which thus reflect in a measure the strong competitive character of the latter industry. Again, dairying results in the more even distribution of labor throughout the year and thus in its more economical utilization. Further, dairying requires both labor and directive capacity of a higher order and of a more systematized quality than does wheat growing, and naturally affords a larger remuneration.[42]

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[39] *Trans. of State Agric. Soc.*, 1880–81, p. 46; 1881–82, p. 181. *Seventh Ann. Rep. Wis. Dairymen's Assoc.*, 125; *Ibid., Eighth Ann. Rep.*, 108 ff.

[40] *Sixth Ann. Rep. Wis. Dairymen's Assoc.*, 22. "There has not been a bad failure in the dairy in the last fifteen years." *Ibid., Eighth Ann. Rep.*, 29.

[41] "A comparison of farm values between Sheboygan and Jefferson counties and the two non-dairying counties Vernon and St. Croix, on the basis of the census of 1885 shows a difference in farm values of land and products of from three to five hundred per cent. in favor of the dairy counties." *Trans. of State Agric. Soc.*, 1890, p. 130. See *Ibid.*, 1879–80, pp. 210–11; also *Fifth Ann. Rep. Wis. State Board of Agric.* for 1903, p. 235. By 1900, dairying had become so general over the state as to constitute an important factor in land values in most of the counties. As has already been pointed out above, however, land values are in general lower in the counties which still raise wheat. See Table XXIII.

[42] "The wheat raiser has but few and simple things to think of. He may plow, sow, reap and market five hundred acres of grain and still be a man of few ideas and of narrow mental culture. But the dairyman is compelled by the very necessity of his business to be a man with eye open and active mind . . . " *Seventh Ann. Rep. Wis. Dairymen's Assoc.*, 24. See also *Farm. Inst.*, (Wis.) *Bulletin* No. 4, p. 62.

Dairying thus tends most of all, directly and indirectly, toward the displacement of wheat and our analysis here is found to agree with the ascertained facts above.[43]

[43] Reference has been made to the important part played by the Wisconsin Dairymen's Association in the development of the dairy industry and thus in the displacement of the unprofitable wheat crop. Great credit is also due to other organizations in a similar way. The State Agricultural Society, the various county agricultural societies, the farmers' institutes, the Grange and other kindred organizations have all labored toward the same end. See Pat. Office Rep. for 1858, *Agriculture*, pp. 210–13.

To the Agricultural School of the State University, however, perhaps more credit is due for the improvement of the agriculture of Wisconsin than to all other similar agencies combined. Always a center of experiment, of discussion, of agitation for and training in better methods, and of the development of valuable technical processes, it has contributed immeasurably to that high intelligence and skill which have enabled the farmers of Wisconsin to reap the corresponding rewards of intelligence and skill. See *Saturday Evening Post*, June 22, 1907.

CHAPTER XI

THE FUTURE OF WHEAT GROWING IN WISCONSIN

What of wheat growing in Wisconsin in the future? May we look for a revival of that industry in that state, comparable to its apparent revival in the state of Ohio?[1] To essay the rôle of prophet would be hazardous; but the conditions upon which wheat growing in Wisconsin in the future appears to depend may be set forth in a provisional way. The problem constitutes in part one phase of the world movement of the wheat area which involves the future of wheat growing in the United States as a whole. On the other hand, it constitutes a

[1] See above pp. 14, 21, for reference to the early decline in wheat growing in Ohio.

Ohio raised a greater number of bushels of wheat (50,376,800 bushels) in the year 1899 than at any other census period in the half century closing with that year. Further, Ohio ranked first among the states in the United States in that year in the production of wheat per aquare mile of area, having produced 1,235.94 bushels per square mile. This figure has been surpassed but once during the census periods included in the fifty years 1850–1900, Indiana having produced 1,316.76 bushels per square mile of area in the year 1879. Further, the per capita yield of wheat in Ohio rose to 12.12 bushels in 1899, after having fallen from 14.39 bushels in 1879 to 9.68 bushels in 1889. Iowa presents, apparently, a somewhat analogous situation but the total yield in that state in 1899 was considerably less than in either 1869 or 1879, while the per capita yield in 1899 (10.20 bushels) was but little more than half that of 1879 (19.18 bushels) and was considerably less than half that of 1869 (24.65 bushels). The increase in the yield per capita from 1889 to 1899 was, however, greater in the case of Iowa than in the case of Ohio—the per capita yield for the former state being 4.31 bushels for 1889. Delaware, Kentucky and Tennessee, both in respect to the production of wheat per capita and per square mile of area, are comparable to Ohio. Indeed, the per capita production of wheat in Delaware and Tennessee and the production per square mile of area in Delaware in 1899 were the largest of any census period from 1850 to 1900. [See *Bulletin of U. S. Dept. of Agric., Divis. of Stat.*, No. 24; *Relations of Population and Food Products in the United States, etc.*, Washington, 1903, pp. 27–32]. In the year 1900, however, Ohio was said to have suffered the greatest failure in the wheat crop ever experienced by any state in the United States. *Harper's Weekly*, 44: 823.

phase of the production of wheat within the boundaries of the United States. These two phases of the question are not independent but may be separated for purposes of discussion. The problem may be stated in another way by saying that wheat growing in Wisconsin must compete with wheat growing in the world at large and with wheat growing in the United States in particular. In addition it must compete with other crops and other farm pursuits in Wisconsin.

For a number of years, the future of wheat growing in the United States has been debated pro and con by experts in both hemispheres. One side claims that the importance of the United States in the production of a surplus for the world's wheat supply must soon diminish on account of the increase in population and the exhaustion of the area of cheap lands within that country and the opening up of new cheap lands in other countries; while the other side claims that the withdrawal of much of the land in the United States from cultivation to wheat is merely temporary, and that steadily higher prices would result in the bringing of it again into cultivation for that purpose.[2] In this discussion there are the widest and most irreconcilable estimates as to the possibility of increasing the wheat area in other countries, considering adaptability to the culture of wheat, competing crops and pursuits, competing foods, transportation and social factors.[3] The whole problem is a complex and difficult

[2] See *Northwestern Miller,* Dec. 30, 1887, and Feb. 3, 1888, for reference to a review of the investigations of a number of men in respect to American competition in wheat growing, by Dr. Rudolph Meyer (1883), and also a review of similar investigations by Dr. Max Sering. See *Nation,* **39:** 259; *Quart. Rev.,* **164:** 445; *Arena,* **3:** 641; *Pop. Sci. Month.,* **54:** 145, 759; **55:** 766-67; *Sat. Rev.,* **96:** 506; *No. Amer. Rev.,* **168:** 191, 511; *Quart. Jour. Econ.,* **18:** 570; *Rev. of Rev.,* **25:** 588; *Jour. of Pol. Econ.,* **1:** 68, 365.

[3] In reference to Canada, see Mavor, *Wheat in the Canadian Northwest;* also *Canad. Mag.,* **3:** 468; **14:** 137; **22:** 561; **26:** 29: *Pop. Sci. Mo.,* **55:** 766; *Cent.,* **65:** 481; *Chicago Record Herald,* Oct. 9, 1905. In reference to Argentina, see *Landwirthschaft und Kolonisation im Spanischen Amerika* von Mr. Kaerger in *Sci. Amer. Sup.,* **54:** 22339; *Rev. of Rev.* **26:** 227; *Outlook,* **64:** 119; *Jour. of Pol. Econ.,* **10:** 206, 333. In reference to Siberia, see *Sci. Amer. Sup.* **43:** 17681-2. In reference to various countries in general, see *Chamber's Journal,* **64:** 837: **72:** 419; Crookes, *The Wheat Problem,* N. Y. and London, 1900; *Nation,* **41:** 544; **66:** 356, 4175; **67:** 237; *Forum,* **24:** 173; **27:** 101; *Pop. Sci. Mo.,* **52:** 760; **53:** 1-9, 351-63: **54:** 759; *Rev. of Rev.,* **16:** 598; *Bankers' Mag.* (*N. Y.*) **50:** 26, 782; *Sat. Rev.,* **58:** 142; **61:** 265; **64:** 662; **96:** 506; *Nature,* **61:** 169; *Nineteenth Cent.,* **43:** 879: **53:** 670; *Journal Royal Statist. Soc.,* **58:** 75; *Rep. of Ind. Com.* (1900) Vol. 6 [Index].

one and perhaps nothing more can be safely done here than to point out tendencies. In the first place, the tendency of the wheat industry to seek new and cheap lands is unmistakable; consequently we may look for a future relative decline of the culture of wheat in this country as a whole while these new and cheap lands are being added to the wheat growing area of the world. That the same causes that operated to drive the wheat area across the country from east to west are now operating to drive it into British North America and into South America is a commonplace statement today. Even though there has been a revival of wheat growing in some of the older states of the United States, still that revival is small when compared with the increase in population, and may be taken as an indication of the relative strength and persistence of the movement of the wheat area out of the country. In Minnesota, there has long been a movement toward the displacement of wheat growing by diversified agriculture. In a great part of the state this already amounts to an accomplished fact.[4] The live stock industry is yearly becoming more important in South Dakota, while even North Dakota is making progress in that direction.[5]

But even should we grant the probability of a permanent rise in the price of wheat and a future revival of wheat culture in those other parts of the United States where it has become unimportant, it seems probable that Wisconsin would be one of the last states in the Union to respond to that movement. The reasons for this assertion lie partly in the strong hold that the dairy industry already has within the state, together with the special adaptation of Wisconsin to that industry, which has its basis in favorable conditions of climate, in social and race factors and in the production of grass, hay, corn and, to a less extent, oats. Wheat must compete with these crops as grown for dairy purposes, as well as with other crops,[6] if it is to regain something of its old importance in the state. To this com-

[4] See Thompson, C. W., *The Movement of Wheat Growing; A Study of a Leading State* in *Quart. Jour. Econ.*, **18**: 570.

[5] See *Bulletin of U. S. Dep. of Agric., Divis. of Stat.*, No. 24, pp. 31, 32.

[6] Especially with potatoes, barley, tobacco, sugar beets, and market gardening.

petition we have seen that wheat has become unequal and so it will probably remain as long as it is a frontier crop and continues to be grown according to the extensive system.[7] An additional reason against the probability of an early return to wheat growing in Wisconsin is found in the bad repute into which that industry has fallen and the prejudice against it among the farmers of the state. No doubt the demand for bread is paramount and must be satisfied; while a considerable and permanent rise in the price of wheat would work wonders in removing the present day prejudice in Wisconsin against that crop. Still, the demand for bread is not inexorable, because it is capable of being replaced, to a certain extent, by competing foods, and among these competing foods dairy products hold an important place. Further, for dairying, Wisconsin has comparatively greater exclusive advantages than for raising wheat. There are relatively many possible areas for the revival of wheat growing in the United States, and, if we can judge from past experience, relatively few areas exceptionally favorable for dairying—particularly in its specialized forms.[8] The conclusion then seems to be warranted that under these conditions the wheat crop in Wisconsin will continue to be unable to compete with that crop as grown in other sections of the United States, as well as with other crops and other farm pursuits within the state itself.

There are those, however, who insist that Wisconsin enjoys no overwhelming natural advantages in reference to dairying and that large areas to the west and to the south, and presumably in other sections of the country now unimportant in respect to that industry, may with the proper amount of well directed effort be reasonably expected to become important centers, in the future, for the production of milk, butter and cheese. It is doubtful, however, whether the combination of favorable conditions that has been seen to exist in Wisconsin in

[7] See above p. 162 ff. and footnote references.

[8] See *Bulletin of Agric. Exper. Stat.*, Univ. of Wis., No. 60. *The Cheese Industry: Its Development and Possibilities in Wisconsin* [1897], together with the accompanying map of the distribution of cheese and butter according to the *Census of 1890*.

respect to the dairy industry, either exists naturally, or can be reproduced artificially in any considerable portions of these other areas at a cost which will permit effective competition with dairying in the former state.

On the other hand, some of the superior advantages enjoyed by Wisconsin dairymen in the past tend to diminish. Ex-Governor Horatio Seymour of New York, when addressing the Wisconsin State Agricultural Society in 1870,[9] expressed the opinion that Wisconsin ought to do well in dairying because in that industry the cost of land plays so important a part and the latter state is well situated in that respect as compared with New York. It was pointed out a decade later that producing dairy products had been sustained on land worth $150 an acre and that Wisconsin dairymen were "protected by the organizations of those that rule the market upon these products upon high priced land."[10] With the rise in the value of land consequent to the introduction of dairying into Wisconsin, due in part to the capitalization of those same superior advantages for that industry, conditions as between New York and Wisconsin in this respect have tended toward equalization, while the cheaper lands beyond the Mississippi river, and elsewhere, that are adapted to dairying have in turn a similar advantage in that respect over the higher priced lands of Wisconsin. Further, it was noted above[11] that the Wisconsin Dairymen's Association was able to secure freight rates on dairy products to the eastern markets so liberal that it cost scarcely more to ship from Wisconsin than from many parts of the dairy region of New York. But there is no reason why this process of the equalization of market conditions by the neglect of distance in making freight tariffs on dairy products should not apply equally well as between Wisconsin and territory still more remote from market. As a matter of fact "The Wisconsin Dairy Manufacturers and Milk Producers' Association" has been recently organized for the purpose of bringing pressure to bear upon the Interstate Commerce Commission in order to secure the maintenance of dis-

[9] *Trans.*, 1870, p. 133 ff.
[10] *Ibid.*, 1879-80, p. 211.
[11] P. 168. See also *Fifth Ann. Rep. Wis. Dairymen's Assoc.*, 30-31.

tance tariff rates on dairy products from competing territory to the west of Chicago.[12] This equalization both in reference to land values and in reference to rates of transportation has also manifested its influence in respect to other farm pursuits, and, as we have seen, explains, in part, the westward movement of both the wheat area and the center of the production of live stock. The significance of these facts for our immediate purpose lies in this: that in so far as natural conditions are measurably adaptable, dairying tends to follow wheat growing and stock-raising westward and either to displace both—and especially the former—or to force different methods in both pursuits. Partly as a result of the operation of these causes, the live-stock industry in the great corn belt to the west and south of Wisconsin has been reduced to an intensive system for the production of corn-fed meat products, with the further result that land values are quite as high as in the dairy regions of Wisconsin.[13] Wheat growing must in like manner either be carried on according to the intensive system or be driven from those regions open to competition from dairying or from other more highly organized farm pursuits—that is, from a large proportion of the present wheat area within the United States. When in this process of competition and equalization the price of wheat rises to a sufficient extent to make intensive wheat growing profitable, wheat may, with the reservations noted above in reference to other competing areas in the United States, be again grown in Wisconsin, but it will be grown in due subordination

[12] See *Chicago Record Herald*, Aug. 2, 1907.

[13] Compare the stall-fed meat products of English farmers on the high priced lands of that country.

In some parts of the great central grain belt of the United States—especially in the state of Illinois—the live stock industry suffers serious competition from the production of cash grain crops. This is made possible by the disregard of soil exploitation which the latter method of farming involves. Land values in those sections are sustained in spite of declining yield by the general upward tendency in the price of lands.

It is to be noted that while the dairy region also moves westward, that industry does not tend to disappear in the older sections as did wheat growing. The reasons for this have been stated in pointing out the essential difference between the two industries. For a discussion of *Dairy Development in the United States* by Henry E. Alvord, Chief of Dairy Division, Bureau of Animal Industry, see *Year Book of the Dept. of Agric.*, 1899, pp. 381–402. See also *Twelfth Census*, 5: 165–86 and 9: 433–459.

to a diversified system of agriculture and not to the exclusion of other farm pursuits as in early days.

Some light may be thrown upon the future possible situation in Wisconsin in reference to the growing of wheat in connection with other farm pursuits by turning, for a closer examination, to those regions of the United States to which reference has already been made as affording an illustration of the apparent revival of wheat growing.[14] It was asserted a score of years ago that the farmers of the Western Reserve in Ohio had been following dairying too exclusively in the past and that they were at that time turning their attention to the growing of wheat in connection with dairying and were getting good results, while they kept just as many cows as before and secured just as good a return from dairying. The wheat crop was said to be profitable in itself, while the straw was valuable for feed and for other purposes in connection with dairying. Further, the wheat crop was found to be the best crop with which to seed down to grass. With careful cultivation, average yields of as high as thirty-five bushels per acre had been secured in some cases for several years in succession and this had been done by the use of improved machinery and without other labor than that resulting from the fuller utilization of the help already employed in dairying.[15] Examination of the statistics of the wheat crop for the year 1899 in Ohio does not, however, seem to fully justify this point of view. The wheat growing and the dairying regions remain to a large extent separate and distinct.[16] Of eleven counties[17] in Ohio producing over one million bushels of wheat each in 1899, but three had over ten thousand dairy cows each and all of these three had less than fifteen thousand each. On the other hand, of the ten counties[18] having over fifteen thousand

[14] See above p. 172, note 1.

[15] *Farm. Inst.*, (Wis.) *Bulletin* No. 1, pp. 126-29.

[16] *Twelfth Census.* See also *Bulletin U. S. Dept. of Agric.*, No. 55, *Bureau of Animal Industry: Statistics of the Dairy,* [with accompanying charts] by Henry E. Alvord, Chief of Dairy Division.

[17] Darke, Seneca, Pickaway, Butler, Hancock, Fayette, Miami, Madison, Preble, Green, and Putnam counties.

[18] Ashtabula, Trumbull, Hamilton, Stark, Geauga, Columbiana, Lorain, Portage, Cuyahoga, and Summit counties.

dairy cows each, but one[19] produced much more than a half million bushels of wheat, while seven produced less than that amount each. A similar examination of the statistics relating to dairying and wheat growing in the state of New York for the year 1899 shows an even greater separation between these two branches of agriculture.[20]

Similar reports of good yields of wheat over a series of years, where grown with proper rotation, have been made occasionally in Wisconsin,[21] but in the meantime wheat growing in general has continued to decline rapidly in that state. The conclusion then seems to be, as already pointed out,[22] that the wheat crop is, on the whole, found less useful than other farm crops as a crop supplementary to dairying, and is accordingly unable to compete with those crops on that account. Accordingly, the prospects for the growing of wheat in connection with dairying in Wisconsin do not seem encouraging. The more complete separation between wheat growing and dairying in New York, where the latter industry is much more important than in Ohio, is significant in this connection.

The other reasons set forth above in reference to the utility of the wheat crop are probably more valid than that of its importance in connection with dairying, and these reasons doubtless explain in large measure its apparent revival in Ohio and other states. This is especially true with reference to the utility of the wheat crop as contributory to successful seeding to grass.[23] As that result is, however, largely due to the fact that wheat is a winter crop in those sections, while winter wheat can be grown

[19] Stark county. Even in this county, however, dairying is largely confined to the eastern portion.

[20] See same references as for Ohio, above, note 16.

[21] *Form. Inst.*, (Wis.) *Bulletin* No. 2, p. 24; No. 5, p. 45; No. 6, p. 53. See also *Trans. of State Agric. Soc.*, 1892, pp. 246, 252.

[22] See above p. 170.

[23] Personal acquaintance with conditions in Ohio for a number of years serves to strengthen belief in this point of view. The high yield of wheat per capita in some counties of Ohio, in 1899, however, proves that in those sections the wheat crop has been found profitable for its own sake. Pickaway, Darke, Seneca, Hancock, and Butler counties raised 44, 35, 32, 26 and 20 bushels per capita respectively in that year.

only to a limited extent in Wisconsin, it follows that there is less reason for growing wheat on that account in the latter state.[24]

On the whole, then, an early return to wheat growing in any considerable degree of importance seems improbable in Wisconsin unless in those few counties where it still persists in a small way. There are certainly no indications of such a revival at present.[25] The age of economic revolutions is, however, not past, and unexpected developments have brought many a prediction to grief.

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[24] See, however, *Farm. Inst.*, (Wis.) *Bulletin* No. 18, p. 58. See also *Ibid.*, No. 2, pp. 24–5.

[25] See above p. 102, note 32.

CHAPTER XII

SUMMARY AND CONCLUSIONS

Adaptability of the soil, adaptability of wheat as a crop suitable for frontier conditions, and economic habit on the part of the early settlers of Wisconsin led to the rise of wheat growing within the state. With crop failure and decline in yield and with the breakdown of the early home market for wheat, a tendency toward diversification appeared as early as 1850. This tendency was, however, soon checked by the construction of railroads, which gave access to outside markets and which led to the spread of the wheat area over a much larger portion of the state and to an even greater specialization in the growing of that crop than before. The introduction of improved farm machinery for the production of wheat—especially during the period of the Civil War—emphasized the tendency toward that crop and facilitated the rapid exploitation of the soil.

Another important factor in producing excessive specialization in the growing of wheat was the favorable public land policy—federal and state—which led to the opening up of the cheap, fertile lands of the state on easy terms and to their settlement with extraordinary rapidity. Men are wasteful of that which costs little and cropping to wheat according to the extensive method afforded the most evident opportunity of taking advantage of the situation. Abundance of cheap land also indirectly facilitated the growing of wheat by affording a basis for the land-grant railroad. Moreover, the combination of cheap lands and railroad construction created a situation preeminently favorable to speculation in land and to this speculation wheat-growing lent itself with peculiar adaptability, as it required a minimum amount of permanent improvements. A continua-

tion of the same policy on terms increasingly favorable to prospective settlers was, in turn, largely instrumental in the movement of the wheat area out of Wisconsin and into other sections, and the state thus became entirely typical of the movement of the wheat area across the country, as a whole, from east to west. Whatever may have been the net political and social effects of the cheap land policy, it is very questionable whether it can be justified economically, as it has been the chief factor leading to reckless soil exploitation and undesirable extensivity in agriculture.

The distrust of railroad corporations by the early settlers of Wisconsin gave away with the break-down of the home-market and the wheat farmers became as eagerly desirous for railroads as they had formerly been hostile. The farmers were led to believe that they might themselves own and control the railroads, and when this hope proved without foundation they were still willing to encourage their construction by granting mortgages upon their land. High anticipations of the benefits to be derived from the construction of railroads were held by the farmers, while the projectors of the railroads were on their part convinced that sufficient business would exist to occupy all the roads that could be constructed to the West, and scouted the idea of competition. Such competition, however, soon developed and was accentuated by the depression of 1857. Local discrimination in rates at once appeared and produced dissatisfaction on the part of the farmers. The situation was the more difficult because of the almost absolute dependence of the wheat farmer upon the railroad, while the latter was on the other hand subject to all the unfavorable conditions incident to an almost entire dependence upon a single commodity for traffic. Combination among the railroads, together with the deficiency in transportation facilities, due to limited construction during the Civil War period, led to higher rates, which were largely maintained after the close of the war and which the wheat farmer was the less able to bear on account of declining prices for wheat, and on account of higher cost of production due to depleted fertility and higher land values. Under these circum-

stances the Granger movement developed in Wisconsin and relations between the railroad and the wheat farmer reached an acute stage. Additional forces, to which the railroad itself had contributed as an educative and economic agent, were, however, already in operation, leading to a marked change in the agriculture of the state, in consequence of which the dependence of farmer upon the railroad became less absolute. The railroad in its turn came to have less complete dependence upon a single industry and benefited accordingly. Largely on account of these circumstances the struggle between the railroads and the farmers in a measure subsided.

In the early movement away from specialization in the growing of wheat, the tendency was at first toward general diversification in grain farming and stock raising. Later a reaction set in toward specialized farming—especially as represented by dairying, which became the characteristic farm industry of the state. Contrary to early opinion, natural conditions in Wisconsin were found to be exceptionally favorable for dairying—particularly for the manufacture of cheese. The changed conditions which made the growing of wheat unprofitable at the same time contributed to the success of dairying. The latter industry in its turn now felt the stimulus of racial and economic habit long dormant because of unfavorable environment. Those who failed to adapt themselves to the new conditions moved out of the state with the wheat area and continued to grow wheat. Dairying required the exercise of a far more discriminating intelligence and unremitting care than the growing of wheat and afforded a much larger sphere for the application of technical knowledge. The compact organization of the dairy farmers, which the coöperative nature of the industry and the high range of intelligence among dairymen furthered, afforded another telling advantage over wheat growing as a pursuit. Favorable rates of transportation were secured for dairy products and a permanent market insured by the development of a high-grade product of uniform quality. Dairying led to the renovation of the soil and to greatly increased values for land and these conditions reacted still more against the growing of wheat, until the latter industry was almost entirely driven from

the state. The tobacco crop played a similar, though far less important, part in the displacement of wheat growing in certain sections of the state, while insect pests and other causes contributed to the same result.

A considerable revival of wheat growing—at least according to the extensive method—appears unlikely in Wisconsin because of the relatively more exclusive advantages in that state for dairying than for the growing of wheat. Neither does investigation of the important dairy and wheat growing districts of New York and Ohio warrant the opinion that wheat growing may be again taken up in an important way, as incidental to dairying, since the two industries appear to be largely confined to separate regions in these two states. Other farm crops appear to be relatively more useful in that connection.

Lastly, it appears that, in accordance with past experience, we may expect a continued movement of the wheat growing area of the world generally, into the relatively less developed regions that are adapted to that crop, until the tendencies that operate toward the equalization of economic conditions between competing areas have worked out their ultimate effects; and such a consideration probably points to a relative decline in the extent of wheat growing within the United States as a whole for an indefinite period in the future.

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NOTE.—With the exception of the census reports, Federal and State, upon which the statistical part of the study is based, the most important original source of material is the *Transactions of the Wisconsin State Agricultural Society*, which constitute a mine of information illustrative of the agricultural development of the state. Next in importance come the *Reports of the Milwaukee Chamber of Commerce*. The *Annual Reports of the Wisconsin Dairymen's Association* and the *Bulletins of the Farmers' Institutes of Wisconsin* are especially valuable for the later period. The *Bulletins of the Agricultural Experiment Station of the University of Wisconsin*, especially those relating to the development of the dairy industry in Wisconsin, have been found of much use. The *Annual Reports* and the *Special Reports* and *Bulletins of the United States Department of Agriculture* have been found highly valuable for the purpose of comparison with respect to other parts of the United States. Especial mention should be made of the early bound volumes of the *Wisconsin Farmer* and the *Prairie Farmer*, the former being valuable for the local point of view and the latter for the West in general.

Frequent reference has been made to *Bulletin* No. 24, U. S. Department of Agriculture, Division of Statistics, from which the suggestion for this study was originally received. Hibbard's *History of Agriculture in Dane County, Wisconsin*, has been of constant assistance, especially in respect to the relations between wheat growing and other farm pursuits, and as a more intensive study of a particular section. Sanborn's *Congressional Grants in Aid of Railways* and Cary's *Organization and History of the C. M. and St. P. Railway Company*, are valuable in reference to the land grants and farm mortgages made to the railroads within the state. The works of Martin and Periam in reference to the farmers' movement are written with a strong bias. Both sides of the controversy are presented more satisfactorily in the columns of the *Atlantic Monthly* and the *North American Review* to which reference is made above. A history of the grange movement in the United States is in course of preparation by Mr. Solon J. Buck, as a Doctor's thesis, University of Wisconsin. The works of Gregory and Ritchie, relative to early conditions in Wisconsin, need to be used with care, and the same warning may be uttered with reference to some of the miscellaneous reports and to some of the county histories of Wisconsin to which only general reference has been made above. It has been thought unnecessary to make especial mention in the bibliography of a great number of the less important sources to which reference has been made in the text.

Appendix

TABLE I.

Per capita production of wheat in Wisconsin, by counties, in order of importance at the different census periods.

[*Federal census, 1849–1899; State census, 1904.*]

Rank.	1849.		1859.		1869.		1879.		1889.		1899.		1904.	
	Counties.	Bushels.	Counties.	Bushels.	Counties.	Bushels.	Counties.	Bushels.	Counties.	Bushels.	Counties.	Bushels.	Counties.	Bushels.
1	Rock	37.7	Green Lake	43.6	St. Croix	74.6	St. Croix	72.5	Buffalo	32.5	Buffalo	27.1	Buffalo	7.9
2	Walworth	36.1	Columbia	42.3	Columbia	52.6	Buffalo	50.6	Calumet	23.4	St. Croix	21.4	Kewaunee	6.8
3	Kenosha	29.6	Dane	40.0	Buffalo	51.0	Trempealeau	47.4	Dodge	20.1	Calumet	17.5	Trempealeau	5.9
4	Dane	20.8	Rock	37.9	Dodge	48.8	Pierce	44.7	Washington	19.1	Pierce	16.7	Door	4.4
5	Columbia	17.7	Fond du Lac	36.1	Trempealeau	48.1	Dodge	41.2	Pepin	17.9	Polk	16.3	Burnett	4.3
6	Green	17.4	Dodge	34.1	Dane	47.7	Washington	39.5	Monroe	15.5	Door	13.6	Jackson	4.1
7	Dodge	17.1	Walworth	30.5	Green Lake	46.6	Green Lake	31.5	Manitowoc	15.4	Trempealeau	13.2	Pepin	3.6
8	Waukesha	16.2	Green	26.8	Fond du Lac	34.9	Pepin	29.6	Green Lake	15.3	Kewaunee	12.9	Shawano	3.6
9	Chippewa	15.5	Kenosha	25.3	Pierce	33.2	Fond du Lac	29.1	Vernon	14.8	Jackson	11.8	Pierce	3.4
10	Racine	14.5	Kewaunee	23.6	Iowa	31.0	Calumet	29.0	Pierce	14.8	Pepin	11.8	Monroe	3.2
11	Jefferson	12.0	Lafayette	22.5	Washington	29.9	Polk	28.7	Trempealeau	13.3	Manitowoc	11.4	Dodge	3.0
12	Fond du Lac	11.5	Waukesha	21.7	Vernon	29.6	Eau Claire	27.8	Sauk	13.2	Monroe	10.3	Eau Claire	2.9
13	Marquette	9.9	Grant	21.5	Monroe	28.7	Dunn	26.8	Kewaunee	12.8	Vernon	9.9	Polk	2.8
14	Grant	7.8	Iowa	21.0	La Crosse	28.6	Ozaukee	26.3	Fond du Lac	12.5	Shawano	8.5	Vernon	2.7
15	Adams	6.6	Trempealeau	20.4	Calumet	27.7	Columbia	26.0	Ozaukee	12.5	Crawford	8.1	Calumet	2.3
16	Washington	6.3	St. Croix	20.2	Jackson	27.6	Waukesha	24.5	Richland	12.3	Brown	7.8	Dunn	2.3
17	Winnebago	5.6	Buffalo	19.7	Grant	24.1	Monroe	24.4	Columbia	11.4	Waupaca	7.6	Washington	2.3
18	Lafayette	5.5	Sauk	19.1	Walworth	23.3	Vernon	24.0	Jackson	11.3	Dodge	7.2	Green Lake	2.2
19	Iowa	5.4	Winnebago	18.9	Waukesha	23.0	Kewaunee	23.4	Outagamie	11.1	Dunn	6.8	Oconto	2.2
20	Calumet	4.5	Pierce	17.3	Green	22.9	Jackson	23.2	Crawford	10.5	Burnett	6.7	Crawford	2.1
21	Sheboygan	3.5	Vernon[1]	16.3	Lafayette	22.8	Chippewa	21.8	Door	10.1	Ozaukee	6.1	Manitowoc	1.9
22	Milwaukee	2.0	Jackson	16.3	Rock	22.2	Crawford	21.4	Shawano	10.1	Eau Claire	5.9	St. Croix	1.9
23	Richland	1.8	Waushera	16.1	Dunn	21.5	Manitowoc	21.4	Polk	9.6	Green Lake	5.6	Barron	1.8
24	Brown	1.0	La Crosse	15.8	Pepin	21.0	Sauk	21.2	Jefferson	8.2	Fond du Lac	5.6	Sauk	1.8
25			Washington	15.3	Sauk	20.5	Iowa	19.4	Waupaca	7.9	Richland	5.5	Marathon	1.7
26			Racine	14.5	Ozaukee	20.1	Outagamie	19.1	Waukesha	7.6	Barron	5.5	Brown	1.6
27			Eau Claire	14.4	Portage	20.0	Winnebago	19.0	Brown	7.6	Washington	5.0	Jefferson	1.6
28			Jefferson	13.7	Winnebago	20.0	La Crosse	18.2	Waushara	7.4	Winnebago	4.9	Juneau	1.4
29			Monroe	13.2	Jefferson	19.9	Sheboygan	17.8	Winnebago	6.5	Oconto	4.8	Marquette	1.4
30			Dunn	12.8	Adams	19.7	Richland	17.7	Sheboygan	6.5	Outagamie	4.8	Ozaukee	1.3
31			Adams	12.5	Eau Claire	19.1	Jefferson	17.2	Marquette	6.2	Waushara	4.4	Clark	1.2
32			Portage	12.5	Sheboygan	19.0	Door	16.7	Dane	5.8	Marquette	4.0	Waupaca	1.2

33			Calumet.	12.3	Marquette	17.9	Dane	16.6	Adams	5.5	La Crosse	3.8	Columbia	1.1
34			Waupaca	10.9	Waushara	17.8	Shawano	15.6	Dunn	5.3	Columbia	3.7	Iowa	1.1
35			Sheboygan	10.5	Kenosha	16.3	Barron	15.3	Walworth	5.2	Sauk	3.6	Langlade	1.1
36			Richland	8.7	Chippewa	15.8	Waushara	13.7	Juneau	5.0	Juneau	3.5	Chippewa	1.0
37			Outagamie	8.5	Manitowoc	15.5	Walworth	12.8	La Crosse	5.0	Chippewa	3.1	Waukesha	1.0
38			Juneau	8 2	Juneau	15.5	Grant	12.7	Eau Claire	3.9	Adams	2.9	La Crosse	1.0
39			Chippewa	7.5	Crawford	14.6	Marquette	12.6	St. Croix	3.7	Portage	2.9		
40			Pepin	7.0	Outagamie	13.6	Waupaca	12.0	Grant	3.6	Sheboygan	2.8		
41			Ozaukee	6.7	Racine	12.7	Portage	11.5	Marathon	3.4	Marathon	2.4		
42			Marquette	5.2	Waupaca	12.6	Adams	11.2	Oconto	3.2	Clark	2.3		
43			Polk	5.2	Richland	12.1	Burnett	10.8	Iowa	3.2	Jefferson	2.2		
44			Clark	4.8	Polk	12.0	Juneau	10.4	Kenosha	2.9	Washburn	2.2		
45			Crawford	4.3	Kewaunee	11.8	Brown	9.4	Racine	2.8	Langlade	2.1		
46			Manitowoc	2.0	Shawano	8.6	Green	8.9	Burnett	2.8	Grant	1.7		
47			Milwaukee	1.9	Door	7.0	Rock	8.8	Clark	2.8	Iowa	1.5		
48			Brown	1.8	Brown	6.5	Racine	6.8	Rock	2.8	Wood	1.3		
49			Shawano	1.5	Marathon	6.0	Lafayette	6.2	Chippewa	2.6	Dane	1.3		
50			Marathon	1.4	Burnett	5.7	Oconto	5.9	Portage	2.2	Waukesha	1.1		
51			Door[1]	1.1	Clark	3.5	Kenosha	5.8	Barron	1 8	Green	0.9		
52					Barron	3.0	Clark	5.3	Green	1.4	Marinette	0.9		
53					Milwaukee	2.6	Marathon	4.2	Lafayette	1.4	Forest	0 6		
54					Oconto	2.6	Marinette	1.9	Wood	0.8	Lincoln	0.5		
55					Wood	2.0	Lincoln	1.9	Marinette	0.5	Walworth	0.5		
56							Milwaukee	1.3	Milwaukee	0.2	Lafayette	0.4		
57							Wood	1.3			Taylor	0.4		
58											Kenosha	0.3		
59											Racine	0.3		
60											Rock	0.2		
	State	14.03		20.18		24.28		18.92		6.94		4.35		1.21

[1] Bad Axe.

TABLE II.

Production of wheat per square mile of improved land in Wisconsin, by counties, in order of importance, at the different Federal census periods (1849–1899.)

Rank.	1849.		1859.		1869.		1879.		1889.		1899.	
	Counties.	Bushels.	Counties.	Bushels.	Counties.	Bushels.	Counties.	Bushels.	Counties.	Bushels.	Counties.	Bushels.
1	Kenosha	4,000	Green Lake	4,127	Buffalo	6,131	Fond du Lac	5,546	Calumet	2,045	Polk	1,582
2	Walworth	3,595	Dane	4,021	St. Croix	5,072	St. Croix	4,336	Buffalo	1,902	Buffalo	1,527
3	Rock	3,504	Dodge	3,987	Trempealeau	4,869	Polk	3,928	Kewaunee	1,761	Kewaunee	1,513
4	Marquette	3,434	La Crosse	3,891	La Crosse	4,790	Pierce	3,911	Outagamie	1,645	Door	1,395
5	Winnebago	3,068	Pierce	3,693	Pierce	4,730	Buffalo	3,668	Washington	1,592	Calumet	1,348
6	Dane	3,043	Buffalo	3,684	Dodge	4,566	Eau Claire	3,153	Manitowoc	1,587	St. Croix	1,348
7	Jefferson	2,704	St. Croix	3,588	Dane	4,090	Washington	3,134	Shawano	1,496	Pierce	1,335
8	Columbia	2,609	Columbia	3,569	Green Lake	4,046	Trempealeau	2,932	Dodge	1,393	Brown	1,324
9	Dodge	2,542	Kewaunee	3,526	Monroe	4,000	Kewaunee	2,917	Pepin	1,372	Manitowoc	1,242
10	Fond du Lac	2,441	Eau Claire	3,483	Columbia	3,859	Door	2,882	Monroe	1,286	Shawano	1,108
11	Racine	2,203	Fond du Lac	3,475	Jackson	3,812	Dodge	2,771	Brown	1,283	Burnett	991
12	Grant	2,041	Rock	3,473	Chippewa	3,778	Calumet	2,668	Door	1,268	Pepin	870
13	Greene	2,016	Winnebago	3,330	Vernon	3,635	Chippewa	2,660	Pierce	1,223	Monroe	835
14	Waukesha	1,902	Iowa	3,163	Fond du Lac	3,617	Pepin	2,579	Green Lake	1,213	Waupaca	788
15	Iowa	1,893	Dunn	3,040	Eau Claire	3,573	Manitowoc	2,564	Ozaukee	1,170	Jackson	778
16	Washington	1,845	Vernon*	2,944	Calumet	3,480	La Crosse	2,554	Winnebago	1,082	Trempealeau	774
17	Adams	1,800	Trempealeau	2,930	Pepin	3,151	Outagamie	2,474	Sauk	1,057	Winnebago	731
18	Chippewa	1,500	Jackson	2,863	Winnebago	3,123	Ozaukee	2,460	Fond du Lac	1,028	Eau Claire	714
19	Lafayette	1,416	Monroe	2,758	Washington	3,116	Winnebago	2,442	Vernon	1,019	Outagamie	713
20	Sheboygan	1,402	Grant	2,624	Outagamie	3,005	Vernon	2,355	Polk	996	Barron	709
21	Calumet	1,232	Portage	2,593	Polk	2,930	Dunn	2,315	Jackson	962	Oconto	703
22	Milwaukee	1,100	Sauk	2,505	Dunn	2,911	Shawano	2,283	Richland	946	Vernon	699
23	Brown	688	Walworth	2,427	Iowa	2,901	Barron	2,276	La Crosse	891	La Crosse	666
24	Richland	510	Waupaca	2,312	Manitowoc	2,521	Monroe	2,176	Crawford	878	Crawford	630
25			Crawford	2,310	Sheboygan	2,427	Jackson	2,062	Sheboygan	834	Washburn	601
26			Lafayette	2,278	Kewaunee	2,401	Sheboygan	1,856	Marathon	803	Ozaukee	584
27			Waukesha	2,256	Ozaukee	2,395	Brown	1,805	Waupaca	786	Langlade	543
28			Calumet	2,241	Juneau	2,383	Sauk	1,784	Trempealeau	788	Dodge	519
29			Chippewa	2,112	Portage	2,317	Waukesha	1,769	Jefferson	693	Dunn	502
30			Waushara	2,078	Shawano	2,300	Green Lake	1,762	Columbia	673	Marathon	501
31			Kenosha	2,076	Sauk	2,267	Burnett	1,729	Oconto	664	Fond du Lac	495
32			Pepin	2,042	Crawford	2,250	Portage	1,693	Waukesha	644	Sheboygan	413
33			Washington	2,016	Burnett	2,234	Richland	1,574	Eau Claire	584	Washington	407

34			Juneau	1,878	Waupaca	2,165	Columbia	1,556	Racine	542	Marinette	404
35			Green	1,790	Waushara	2,162	Oconto	1,456	Burnett	497	Green Lake	388
36			Outagamie	1,767	Grant	2,137	Jefferson	1,356	Juneau	493	Forest	387
37			Richland	1,613	Brown	2,027	Crawford	1,344	Dunn	471	Richland	370
38			Marquette	1,604	Door	1,932	Marathon	1,232	Clark	446	Chippewa	368
39			Sheboygan	1,603	Waukesha	1,905	Waupaca	1,224	Dane	402	Clark	317
40			Polk	1,492	Jefferson	1,900	Iowa	1,166	Waushara	402	Juneau	291
41			Racine	1,442	Marathon	1,869	Milwaukee	1,115	Chippewa	367	Portage	290
42			Jefferson	1,411	Adams	1,746	Marinette	1,089	Walworth	363	Jefferson	283
43			Shawano	1,362	Walworth	1,745	Dane	1,027	Lincoln	353	Sauk	269
44			Brown	1,317	Rock	1,737	Juneau	950	Milwaukee	340	Wood	238
45			Milwaukee	1,148	Milwaukee	1,688	Waushara	840	Marinette	326	Columbia	236
46			Clark	1,126	Richland	1,673	Walworth	817	Marquette	306	Lincoln	234
47			Adams	1,101	Lafayette	1,591	Lincoln	795	Adams	284	Waushara	213
48			Ozaukee	1,053	Marquette	1,487	Grant	751	Barron	278	Marquette	212
49			Manitowoc	1,030	Oconto	1,454	Racine	704	St. Croix	253	Milwaukee	173
50			Door	944	Green	1,382	Marquette	680	Portage	241	Oneida	168
51			Marathon	917	Racine	1,245	Adams	618	Kenosha	230	Iron	150
52					Kenosha	902	Rock	571	Rock	218	Adams	139
53					Clark	864	Clark	548	Grant	202	Taylor	119
54					Wood	849	Green	436	Wood	188	Sawyer	117
55							Kenosha	287	Iowa	162	Dane	105
56							Lafayette	257	Green	78	Waukesha	104
57							Wood	256	Lafayette	69	Grant	102
58							Taylor	219			Price	100
59											Iowa	82
60											Racine	69
61											Green	48
62											Walworth	44
63											Kenosha	38
64											Rock	23
65											Lafayette	19
	State	2,624		2,675		2,778		1,709		764		512

* Bad Axe.

TABLE III.

Index of specialization[1] *in the production of wheat in Wisconsin, by counties, in order of importance, at the different Federal census periods,* [*1849–1899.*]

Rank.	1849.		1859.		1869.		1879.		1889.		1899.	
	Counties.		Counties.		Counties.		Counties.		Counties.		Counties.	
1	Rock	363	Green Lake	424	St. Croix	615	St. Croix	561	Buffalo	249	Buffalo	203
2	Walworth	360	Dane	401	Buffalo	559	Buffalo	431	Calumet	219	St. Croix	170
3	Kenosha	344	Columbia	389	Trempeleau	494	Pierce	418	Washington	174	Polk	161
4	Dane	252	Dodge	368	Dodge	472	Fond du Lac	401	Dodge	167	Calumet	154
5	Columbia	215	Rock	363	Columbia	451	Trempealeau	374	Pepio	157	Pierce	150
6	Dodge	208	Fond du Lac	354	Dane	442	Washington	352	Manitowoc	156	Kewaunee	140
7	Green	187	Kewaunee	288	Green Lake	434	Dodge	338	Kewaunee	150	Door	138
8	Marquette[2]	184	Walworth	272	Pierce	396	Polk	336	Monroe	141	Manitowoc	120
9	Jefferson	180	Buffalo	270	Jackson	394	Eau Claire	296	Green Lake	140	Brown	102
10	Racine	179	St. Croix	270	La Crosse	371	Calumet	278	Outagamie	135	Trempealeau	101
11	Waukesha	176	Iowa	258	Fond du Lac	355	Pepin	276	Pierce	135	Pepin	101
12	Fond du Lac	168	Pierce	253	Monroe	339	Kewaunee	261	Veroon	123	Shawano	97
13	Chippewa	152	Winnebago	251	Vernon	328	Ozaukee	254	Shawano	123	Jackson	96
14	Winnebago	131	La Crosse	246	Calumet	310	Dunn	249	Ozaukee	121	Monroe	93
15	Grant	126	Trempealeau	244	Washington	305	Chippewa	241	Sauk	119	Vernon	83
16	Adams[3]	109	Grant	238	Iowa	300	Vernon	238	Door	113	Burnett	81
17	Washington	108	Kenosha	230	Eau Claire	261	Green Lake	236	Fond du Lac	113	Waupaca	77
18	Iowa	101	Lafayette	226	Pepin	257	Manitowoc	234	Richland	108	Crawford	71
19	Lafayette	88	Eau Claire	224	Winnebago	250	Monroe	230	Jackson	104	Eau Claire	65
20	Calumet	74	Waukesha	221	Dunn	250	Door	220	Trempealeau	102	Barron	62
21	Sheboygan	70	Green	219	Chippewa	244	Jackson	219	Brown	99	Dodge	61
22	Milwaukee	47	Sauk	219	Grant	227	Outagamie	217	Polk	98	Winnebago	60
23	Richland	30	Vernon	219	Ozaukee	219	La Crosse	216	Crawford	96	Ozaukee	60
24	Brown	26	Jackson	216	Sauk	216	Winnebago	215	Columbia	88	Outagamie	59
25			Dunn	197	Sheboygan	215	Waukesha	208	Winnebago	84	Dunn	59
26			Monroe	191	Portage	215	Columbia	201	Waupaca	79	Oconto	58
27			Waushara	183	Waukesha	209	Sauk	194	Jefferson	75	Fond du Lac	53
28			Portage	180	Walworth	202	Shawano	189	Sheboygan	74	La Crosse	50
29			Washington	176	Outagamie	203	Barron	188	Waukesha	70	Green Lake	47
30			Calumet	168	Manitowoc	198	Sheboygan	182	La Crosse	67	Washington	45
31			Waupaca	159	Rock	196	Crawford	170	Waushara	55	Richland	45
32			Racine	145	Wanshara	196	Richland	167	Marathon	52	Washburn	36
33			Jefferson	139	Jefferson	194	Jefferson	153	Dunn	50	Marathon	35

34			Sheboygan	130	Juneau	192	Iowa	150	Juneau	50	Langlade	34
35			Chippewa	126	Lafayette	190	Portage	140	Eau Claire	48	Sheboygan	34
36			Juneau	124	Polk	187	Burnett	137	Dane	47	Chippewa	34
37			Outagamie	123	Adams	185	Dane	131	Oconto	46	Juneau	32
38			Pepin	120	Crawford	181	Brown	130	Marquette	44	Sauk	31
39			Richland	118	Green	178	Wanpaca	121	Walworth	43	Waushara	31
40			Adams	117	Kewaunee	170	Waushara	107	Adams	40	Columbia	30
41			Crawford	100	Waupaca	165	Walworth	102	Racine	39	Portage	29
42			Marquette	91	Marquette	163	Juneau	99	Burnett	37	Marquette	29
43			Polk	88	Shawano	141	Grant	98	Clark	35	Clark	27
44			Ozaukee	85	Racine	126	Oconto	93	Chippewa	31	Jefferson	25
45			Clark	74	Kenosha	125	Marquette	93	St. Croix	31	Adams	20
46			Brown	49	Door	116	Adams	83	Grant	27	Marinette	19
47			Milwaukee	47	Brown	115	Marathon	72	Kenosha	26	Wood	18
48			Manitowoc	45	Burnett	113	Rock	71	Rock	25	Grant	13
49			Shawano	45	Marathon	106	Racine	69	Iowa	23	Dane	12
50			Marathon	36	Richland	101	Green	62	Portage	23	Lincoln	11
51			Door	32	Milwaukee	66	Clark	54	Barron	22	Waukesha	11
52					Oconto	61	Marinette	45	Marinette	13	Iowa	11
53					Clark	55	Kenosha	41	Wood	12	Green	7
54					Wood	41	Lafayette	40	Green	10	Walworth	5
55							Lincoln	39	Lafayette	10	Racine	4
56							Milwaukee	38	Milwaukee	8	Milwaukee	4
57							Wood	18			Kenosha	3
58											Lafayette	3
59											Rock	2
	State	192		232		260		180		73		47

[1] See p. 50, note 63.

[2] Includes Waushara and Green Lake.

[3] Includes Sauk and Juneau.

TABLE IV.

Statistics of yearly production, acreage and yield per acre of wheat in Wisconsin.

Year.	Production.			Acreage.			Yield per acre.	
	United States census.	Agricultural reports (U. S.)	Secretary of state's reports, (Wis.) and state census reports.	United States census.	Agricultural reports. (U. S.)	Secretary of state's reports, (Wis.) and state census reports.	Agricultural reports. (U. S.)	State and Federal census Reports of sec. of state (Wis.)
	Bushels.	Bushels.	Bushels.	Acres.	Acres.	Acres.	Bushels.	Bushels.
1839 † 1840 †	212,116†	.....	.....	.....	.....	15,151‡	.....	.....
1841	.....	297,541	.....	.....	.....	.....	.....	.....
1842	.....	434,409	.....	.....	.....	.....	.....	.....
1843	.....	606,740	.....	.....	.....	.....	.....	.....
1844	.....	728,000	.....	.....	.....	.....	.....	.....
1845	.....	971,000	.....	.....	.....	.....	.....	.....
1847‖	.....	1,200,000	.....	.....	.....	.....	.....	.....
1848§	.....	1,600,000	.....	.....	.....	.....	.....	.....
1849	4,286,131	.....	.....	.....	306,152	.....	.....	.....
1855	.....	9,000,000[1]	8,000,000[2]	.....	.....	.....	.....	.....
1856	.....	12,000,000[2]	8,717,756*	.....	.....	521,393	.....	16.7
1857	.....	14,000,000[3]	2,956,321*	.....	.....	168,865	.....	.....
1858	.....	.....	7,029,273*	.....	.....	603,811	.....	.....
1859	15,657,458	.....	.....	.....	.....	.....	.....	.....
1860	.....	29,738,716[2]	27,316,306	.....	1,062,097[2]	1,112,630	28.0[2]	24.5
1861	.....	15,000,000[2]	.....	.....	.....	.....	.....	.....
1862	.....	20,765,781	.....	.....	1,221,517	.....	17.0	.....
1863	.....	20,842,359	.....	.....	1,488,739	.....	14.0	.....
1864	.....	14,168,317	8,842,466*	.....	1,491,401	1,063,338	9.5	8.3
1865	.....	20,307,920	11,601,183*	.....	1,208,805	883,592	16.8	.....
1866	.....	20,307,920	.....	.....	1,400,546	.....	14.5	.....
1867	.....	22,000,000	.....	.....	1,788,617	.....	12.3	.....
1868	.....	22,660,000	.....	.....	1,743,076	.....	13.0	.....
1869	25,606,344	24,000,000	.....	.....	1,568,627	.....	15.3	.....
1870	.....	20,485,000	.....	.....	1,528,731	.....	13.4	.....
1871	.....	18,436,000	.....	.....	1,511,147	.....	12.2	.....
1872	.....	22,307,000	.....	.....	1,559,930	.....	14.3	.....
1873	.....	26,322,000	.....	.....	1,595,273	.....	16.5	.....

† Uncertain whether figures for crops of 1839 or crop of 1840. See *History and Growth of the United States Census*, by Carroll D. Wright and William C. Hunt, p. 32. [Washington, 1900.]

‡ *Report of the Milwaukee Chamber of Commerce*, 1862, p. 49. Uncertain whether the estimate is for the crop of 1839 or crop of 1840.

‖ No estimates were made for the year 1846. See *Report of the Commissioner of Patents*, 1846 [*House Exec. Doc.* 29th Cong., 2nd Sess., vol. 3, No. 52, p. 8].

§ The estimates for the years 1841 to 1848 inclusive are from the Patent Office Reports. In reference to the lack of similar estimates for the years 1849 to 1861 inclusive, and for an unfavorable criticism of the estimates before 1849, see *Report of the Commissioner of Patents, Part II, Agriculture*, 1849, pp. 14–15.

[1] *Wis. Farmer* 1855, p. 234, gives yield from 9,000,000 to 10,000,000 bushels.

[2] *Rep. Milwaukee Board of Trade.*

[3] *Wis. Farmer*, 1858, p. 50.

* Defective for acreage and yield.

TABLE IV—Continued.

Statistics of yearly production, acreage and yield per acre of wheat in Wisconsin.

Year.	Production.			Acreage.			Yield Per Acre.	
	United States census.	Agricultural reports. (U. S.)	Secretary of state's reports, (Wis.) and stats census reports.	United States census.	Agricultural reports. (U. S.)	Secretary of state's reports, (Wis.) and state census reports.	Agricultural reports. (U. S.)	State and Federal census Reports of sec. of state. (Wis.)
	Bushels.	Bushels.	Bushels.	Acres.	Acres.	Acres.	Bush	Bush.
1874		18,436,000			1,603,130	1,794,919	11.5	
1875		25,200,000			1,800,000	1,539,008	14.0	
1876		16,800,000			1,886,668	1,612,932	9.0	
1877		22,000,000	20,596,744		1,466,667	1,445,650	15.0	14.2
1878		21,154,400	20,921,373		1,706,000	1,798,647	12.4	
1879	24,884,689	20,565,720	21,040,288	1,948,160	1,632,200	1,775,665	12.6	
1880		16,854,735	15,606,200		1,753,130	1,737,921	9.5	12.8
1881		17,987,000	14,172,841		1,595,300	1,343,011	11.3	
1882		23,145,400			1,610,000	1,101,463	14.4	
1883		19,604,900	15,493,219		1,593,900		12.3	
1884		20,083,000	21,033,008		1,434,510	1,109,721[1]	14.0	17.2
1885		15,665,000	12,955,456		1,362,785		11.5	
1886		14,725,000			1,281,018	1,012,579	11.5	
1887		13,063,000	9,943,487		1 268,208		10.3	
1888		13,855,000			1,204,798	753,111	11.5	
1889	11,698,922	16,937,000	9,866,322	744,080	1,192,750		14.2	15.7
1890		13,096,000			1,073,475	726,458	12.2	
1891		13,043,000	9,457,132		966,128		13.5	
1892		8,814,000			766,429	707,457	11.5	
1893		8,664,485	8,063,627		651,465		13.3	
1894		9,366,176[2]	8,565,071		567,647	464,512[3]	16.5	18.2
1895		8,616,218	4,343,008		555,885		15.5	
1896		8,898,950	4,542,263		669,094	397,631	13.3	
1897		7,690,775	5,463,800		615,262	366,732	12.5	
1898		13,689,972	9,072,168		760,554	566,668	18.0	
1899	9,005,170	11,773,382	7,206,338	556,614	759,573	510,572	15.5	16.2
1900		13,166,599	6,084,506		849,458	473,259	15 5	
1901		7,576,874			469,920	432,758	16.1	
1902		9,655,094			532,104		18.1	
1903		8,365,335			53[illegible],589		15.6	
1904		7,483,563	2,700,813		483,006	210,010	15.5	12.9

[1] 1,221,313 according to the *State Census.*

[2] *Report,* No. 120, New Series (Oct. 1894) U. S. Dept. of Agric., Division of Statis., II: 629 for estimate of yield of wheat per acre in Wisconsin in 1894. *Report* No. 122, Doc., 1894, *ibid.* 723, for estimate of acreage and total yield in Wisconsin in 1894.

[3] 471,163 according to the *State Census.*

TABLE V.

Average yield of wheat per acre in Wisconsin, by counties; *Report of Secretary of State of Wisconsin*, for the years 1856, 1860, 1864, and 1877; *Federal Census* for 1879, 1889 and 1899; *State Census* for 1884, 1894 and 1904.

Counties.	Bushels.									
	1856*	1860	1864[1]	1877	1879	1884	1889	1894	1899	1904
Adams	.....	19.4	4.7	8.8	10.3	13.4	13.1	12.4	13.1	8.8
Barron	.....	.....	.....	16.6	12.2	14.6	12.9	12.1	17.2	16.8
Brown	15.4	26.3	7.6	12.3	13.5	17.3	15.6	14.0	15.0	10.5
Buffalo	19.5[2]	17.1	13.0	14.5	12.1	15.4	16.6	19.1	16.1	11.2
Burnett	.....	.....	25.0	15.6	13.5	14.5	14.2	9.8	17.0	13.5
Calumet	20.5	13.7	10.1	15.8	12.4	19 5	19.2	19.6	19.2	10.8
Chippewa	.....	23.7	11.6	20.5	11.5	16.2	14.7	11.8	16.7	15.4
Clark	.....	.....	12.8	12.6	12.5	18.4	18.8	19.5	16.6	15.0
Columbia	17.2	22.0	7.6	13.7	10.5	17.1	15.1	17.9	16.7	12.0
Crawford	12.4	19.1	7.4	12.9	12.7	13.8	13.2	16.1	14.1	9.4
Dane	17.1	23.1	6.1	12.0	9.8	17.5	13.5	16.0	16.3	13.9
Dodge	16.1	24.3	9.9	13.1	13.3	18.4	16.6	22.7	20.0	13.9
Door	25.0[3]	17.6	16.2	21.7	16.1	17.9	12.9	14.7	14 4	10.1
Dunn	14.5	21.0	10.1	15.0	10.9	15.5	15.4	16.4	16.4	15.4
Eau Claire	.....	24.5	11.3	15.8	12.4	15.2	15.6	13.7	14.8	14 1
Fond du Lac	19.1	23.2	10.6	14.7	12.2	18.7	16.3	21.9	19.2	13.2
Grant	.....	21.2	6.7	8.9	11.5	14.4	11.6	15.7	13.0	11.2
Green	15.9	22.4	5.1	9.6	16.4	17.5	11.7	22.4	18.3	15.0
Green Lake	.....	26.0	8.9	11.7	11.2	14.8	14.4	16.5	14.4	11.3
Iowa	17.8	19.9	4.2	12.0	15.5	15.4	12.8	17.0	13.2	13.2
Jackson	16.9	25.0	10.4	13.5	10.2	15.5	17.8	23.1	16.9	12.6
Jefferson	15.1	23.9	9.5	12.2	16.0	19.7	16.4	24.2	19.0	15.1
Juneau	16.8	22.3	6.5	9.5	15.0	15.5	16.1	17.1	15.8	14.8
Kenosha	16.5	27.0	6.7	7.9	14.0	19.2	13 5	17.1	19.2	17.3
Kewaunee	.....	.....	.....	11.4	13.5	17.8	13.4	13.8	14.2	9.7
La Crosse	.....	22.0	15.0	12.0	11.3	14.9	17.5	19.1	16.7	13.1
Lafayette	17.8	12.5	4.0	7.7	14.5	16.2	9.9	18.6	15.2	14,4
Langlade	.....	.....	.....	.....	12.2	17.0	16.3	18.7	17.7	19.5
Lincoln	.....	.....	.....	.....	11.7	20.1	16.0	17.0	15.4	12.7
Manitowoc	18.6	19.8	10.9	[4]	13.2	17.0	15.1	16.6	16 0	11.9
Marathon	.....	17.6	7.0	14.8	10.4	17.8	15.3	13.7	14.0	15.6
Marinette	.....	.....	.....	.....	16.8	18.5	13.5	18.0	15.0	13.6
Marquette	14.7	19.9	4.5	8.3	10.1	11 4	11.4	11.5	13.8	10.4
Milwaukee	.....	26.0	8.5	13.5	16.2	21.2	17.9	20.4	21.2	13.3
Monroe	18.8	19.8	11.9	12.8	13.1	14.1	17.5	18.5	17.5	13.3
Oconto	.....	21.1	11.6	11.1	13.8	18.2	14.3	17.5	15.3	12.4
Outagamie	18.9	11.1	8.3	48.9[5]	13.5	20.3	19.6	20.8	14.6	11.2
Ozaukee	.....	22.2	.....	21.2	13.3	20.2	15.6	18.3	19.5	14.2
Pepin	.....	19.9	13.8	11.2	12.0	16.7	16.8	17.0	17.2	15.3
Pierce	.....	23.4	12.3	17.4	13.0	19.0	18.6	17.0	16.3	16.6
Polk	.....	16.8	11.1	[4]	14.4	18.3	16.3	10.1	15.5	18.9
Portage	.....	20.0	6.5	10.3	9.4	14.9	12.6	12.0	13.5	9.9
Racine	15.9	31.3	6.0	11.7	15.6	19.3	14.6	16.3	18.6	17.5
Richland	14.3	17.6	10.8	15.6	15.2	13.6	14.4	16.0	13.1	11.6
Rock	16.8	23 7	5.7	14.5	14.7	18.8	11 6	19.2	19.9	15.8
St. Croix	15.1	21.7	12.7	16.5	12.4	18.2	15.6	10.6	15.4	15.4
Sauk	.....	24.1	6.4	12.5	15.2	17.2	17.5	19.5	14.8	12.9
Shawano	7.5	18.0	14.8	[4]	13.1	17.0	15.2	23.4	16.1	12.5
Sheboygan	19.9	21.4	11.0	14.5	13.4	18.3	16.4	21.5	17.9	11.9
Trempealeau	19.7	23.4	13.8	15.0	11.2	15.3	17.1	20.0	17.3	13.4
Vernon	.....	26.3	10.7	12.5	12.8	15.0	16.3	19.4	15.3	11.9
Walworth	16.0	27.2	6.4	11.8	12.8	19.7	10.9	18.2	15.4	20.1
Washburn	.....	.....	.....	.....	.....	20.0	.....	.....	.....	15.1
Washington	16.8	22.5	9.1	13 3	15.7	18.4	16.8	20.8	17.2	12.2
Waukesha	16.7	25.6	6.5	12.7	16.9	20.2	14.3	19.4	17.0	17.7
Waupaca	.....	20.4	6.2	11.2	11.6	17.2	16.9	20.7	19 8	13.5
Waushara	12.7	17.7	6.0	10.3	10.4	12.8	14.6	13.2	14.4	20.8
Winnebago	17.4	24.6	8.4	15.4	14.4	17.6	18.2	18.9	18.2	11.8
Wood	.....	.....	.....	7.1	9.0	16.5	17.1	18.6	15.0	13.6
State	16.7	24.5	8.3	14.2	12.8	17.2	15.7	18.2	16.2	12.8

[1] "So imperfect as to be almost worthless;" *Rep. Sec. State.*
[2] The report for 1856 gives the figures 1.95 but as this appears to be a typographical error, the figures 19.5 are substituted.
[3] The entire yield for this county for this year was 200 bushels.
[4] Census defective.
[5] It is questioned whether or not this number is a misprint.
* Dejective.

TABLE VI.

Total production of wheat in the United States, 1839 to 1849, 1853, 1859, and 1862 to 1904 [calendar years].

	Bushels.		Bushels.
1839†	84,823,272*	1878	420,122,400
1840		1879	448,756,630
1841	91,642,957		459,483,137*
1842	102,317,340	1880	498,549,868
1843	100,310,856	1881	383,280,090
1844	95,607,000	1882	504,185,470
1845	106,548,000	1883	421,086,160
1847‡	114 245,500	1884	512,765,000
1848‖	126,364,600	1885	357,112,000
1849	100,485,944*	1886	457,218,000
1853	110,000,000[1]	1887	456,329,000
1859	171,183,381[2]	1888	415,868,000
	173.104,924*	1889	490,560,000
1862	169,993,500[3]		468,378,968*
1863	191,068,239[4]	1890	399,262,000
	173,677,928[5]	1891	611,780,000
1864	160,695,823[6]	1892	515,949,000
1865	148,552,829[7]	1893	396,131,725
1866	151,999,906[8]	1894	460,267,416
1867	212,441,400	1895	467,102,947
1868	224,036,600	1896	427,684,346
1869	260.146,900	1897	530,149,168
	289,745,626*	1898	675,148,705
1870	235,884,700	1899	547,303,846
1871	230,722,400		658,534,252*
1872	249,997,100	1900	522,229,505
1873	281,254,700[9]	1901	748,460,218
1874	308,102,700	1902	670,063,008
1875	292,136,000	1903	637,821,835
1876	289,356,500	1904	552,399,517
1877	364,194,146		

† The figures opposite are from the *Sixth Census,* but it is uncertain whether they are for the crop of 1839 or for the crop of 1840. See *History and Growth of the United States Census,* by Carroll D. Wright and William C. Hunt, p. 32 [Washington, 1900]. For alleged gross inaccuracies in the Sixth Census, see *House Reports,* 28th Cong., 1st Sess., vol. III, No. 580.

* *United States Census.*

‡ No estimates were made for the year 1846. See *Patent Office Report* for 1846 [*House Exec. Doc.,* 29th Cong. 2nd Sess., vol. 3, No. 52, p. 8].

‖ The estimates for the years 1841 to 1848 inclusive are from the Patent Office Reports for those years. In reference to the lack of similar estimates for the years 1849 to 1861 inclusive (except 1853), see *Report of the Commissioner of Patents, Part II, Agriculture,* 1849 pp. 14–15.

[1] Pat. Office Rep., *Agriculture,* 1853, p. 129.

[2] *Rep. of Com. of Agric.* (U. S.) for 1862, p. 10.

[3] *Ibid.* for 1863, p. 3.

[4] *Ibid.*

[5] *Ibid.* for 1864, p. 577.

[6] *Ibid.* for 1864.

[7] *Ibid.* for 1865.

[8] *Statist. Abstract of the United States,* 1905, p. 516, for statistics of years 1866 to 1904.

[9] Given 281,254.700 in the *Statist. Abstract of the United States,* 1878, p. 153, and in the *Rep. of the Com. of Agric. for* 1873, p. 26.

TABLE VII.

Mileage of railroads in Wisconsin by years [*Wisconsin Blue Book* for 1905, p. 1,004]: yearly receipts and shipments of wheat and flour and yearly manufacture of flour at Milwaukee. [*Reports of the Milwaukee Chamber of Commerce*, and the *American Railroad Journal*]

Years.	Mileage of railroads in Wisconsin. By years.	Receipts of wheat at Milwaukee. [Bushels.]	Shipments of wheat from Milwaukee. [Bushels.]	Receipts of flour at Milwaukee. [Barrels.]	Shipments of flour from Milwaukee. [Barrels.]	Manufacture of flour at Milwaukee. [Barrels.]
1845			95,510		7,550	
1846			213,448		15,758	
1847			598,911		34,840	
1848			602,474		92,732	
1849			1,136,023		136,657	
1850			297,578		100,017	
1851	35.5		317,285		51,889	
1852	71.5		564,404		92,995	
1853	90.1		956,703		104,055	
1854	151.9		1,809,452		145,033	
1855	318.8		2,641,746		181,569	130,000
1856	507.7		2,761,979		188,415	118,000[1]
1857	700.2		2,581,311		228,422	
1858	761.6	4,876,177	3,994,213	206,129	298,688	150,107
1859	849.5	5,580,681	4,634,227	239,952	282,956	142,500
1860	880.7	9,108,458	7,568,608	305,202	457,543	202,810
1861	900.7	15,930,706	13,300,495	518,300	674,474	250,256
1862	957.2	15,613,995	14,915,680	529,600	711,405	221,729
1863	957.2	13,485,419	12,837,620	453,124	603,526	185,813
1864	1,030.3	9,147,274	8,992,479	295,225	414,833	187,339
1865	1,030.3	12,043,659	10,479,777	389,771	567,576	212,829
1866	1,030.3	12,777,557	11,634,749	495,901	720,365	328,730
1867	1,030.3	12,523,464	9,598,452	502,252	921,663	546,000
1868	1,089.0	12,761,648	9,878,099	567,358	1,017,598	625,000
1869	1,141.0	17,745,238	14,272,799	807,763	1,220,058	481,511
1870	1,286.4	18,883,837	16,127,838	824,799	1,225,941	530,049
1871	1,798.3	15,686,611	13,409,467	796,782	1,211,427	567,893
1872	1,975.4	13,617,939	11,570,575	834,202	1,232,036	560,206
1873	2,379.0	28,457,937	24,994,268	1,254,821	1,805,200	634,102
1874	2,465.9	25,628,143	22,255,380	1,616,338	2,217,579	735,481
1875	2,513.9	27,878,727	22,681,020	1,443,801	2,163,346	746,126
1876	2,647.6	18,174,817	16,804,394	2,082,688	2,654,028	647,581
1877	2,707.7	19,814,949	18,298,485	1,930,440	2,286,426	561,201
1878	2,798.0	21,763,312	17,254,453	2,288,303	2,630,022	555,049
1879	2,909 9	19,649,352	15,060,222	2,424,673	2,983,439	752,133
1880	3,120.2	11,756,463	9,952,629	2,419,176	2,805,878	637,157
1881	3,425.2	10,176,098	7,992,665	3,376,296	4,034,288	859,388
1882	3,702.5	8,058,422	2,193,539	3,354,304	4,248,054	1,348,509
1883	3,895.6	9,278,922	3,109,439	3,370,799	3,990,596	879,512
1884	4,259 5	13,193,922	7,187,838	4,076,871	4,601,267	1,070,860
1885	4,336.4	12,658,559	8,235,977	3,796,195	4,354,144	961,152
1886	4,746.5	11,120,575	7,430,766	4,730,702	5,078,614	952,802
1887	5,082.6	14,237,251	14,093,875	3,952,685	4,912,843	1,214,648
1888	5,272.0	8,129,315	2,691,078	2,427,336	3,410,289	1,421,258
1889	5,389.5	7,469,289	1,882,980	2,379,800	3,233,426	1,266,226
1890	5,471.7	8,046,461	1,952,122	2,401,235	3,201,613	1,397,039
1891	5,548.6	10,846,495	2,764,412	2,537,273	3,812,211	1,826,758
1892	5,784.6	15,205,639	3,709,509	2,685,353	4,310,065	2,117,000
1893	5,925.5	12,806,319	3,491,037	1,873,166	3,061,275	1,850,823
1894	6,003.7	8,101,616	805,042	2,209,408	3,163,271	1,576,064
1895	6,176.8	9,697,379	2,752,705	2,693,270	3,375,553	1,532,510
1896	6,193.3	9,336,036	2,537,173	3,196,950	4,568,013	1,628,140
1897	6,205.0	9,526,878	2,029,999	2,448,449	3,924,800	1,758,020
1898	6,284.1	13,539,840	4,900,872	2,579,905	3,824,152	1,741,347
1899	6,487.2	12,345,383	3,787,012	3,165,105	3,978,078	1,737,826
1900	6,592.0	10,848,939	2,166,431	3,012,625	3,788,658	1,866,501
1901	6,725.1	13,050,850	4,111,622	2,919,300	4,034,928	1,939,966
1902	6,987.7	10,360,593	2,338,989	3,681,400	4,409,899	1,755,051
1903	6,862.2	9 031,815	1,710,156	3,307,995	4,112,794	1,443,420
1904	6,923.3	8,427,256	2,132,892	2,301,705	3,098,421	1,320,611

[1] Exclusive of custom milling.

TABLE VIII.

Range of quotations for the price of wheat at Milwaukee, during the months of January, April, July, and October, 1858-1904. [No. 1 spring, 1858-1868; No. 2 spring,* 1869-1897; No. 1 northern spring, 1898-1904 (*Forty-seventh Annual Report of the Trade and Commerce of Milwaukee*, 1904, pp. 80-82)].

	1858.	1859.	1860.	1861.	1862.	1863.
January	55-60	77-112	99-102	75-82	70- 75	100-131
April	60-66	100-113	98-115	83-84	77- 86	115-122
July	66-75	59- 95	90-112	74-83	81- 97	100-116½
October	65-88	72- 85	85- 94	73-81	89-104⅛	102-118

	1864.	1865.	1866.	1867.	1868.	1869.
January	115½-121⅛	142 -177	121¾-132	205-221	199 -207⅛	110 -118¾
April	114½-134	98 -121⅛	126 -166⅛	245-285	196 -209¼	102¾-110
July	202 -226	101 -131½	157¾-211⅛	205-240	180½-196¾	124 -140
October	137 -186⅛	132½-145½	198 -229	185-200	123½-139¾	91½-107

	1870.	1871.	1872.	1873.	1874.	1875.
January	75¾- 84⅛	108¾-132	120¾-124	119-127⅛	117 -126½	88½- 90⅞
April	73 - 94½	121¾-132	119¾-137	116-129¼	124¼-131	94 -105½
July	106¼-135	106½-124¾	118½-127½	118-127	109¾-121⅝	104¼-133
October	96¾-110½	117 -127	106½-122	100-112	84 - 96½	108 -115

	1876.	1877.	1878.	1879.	1880.	1881.
January	97⅜-102⅜	126¼-133⅛	102⅛ 110¼	82⅛- 87	114¼-130⅜	95½- 98¾
April	99¾-106½	134½-190	106⅛-115⅝	86½- 93½	102 -113	98¾-103⅛
July	90 -106	124 -158½	94 -130	88¼-102¾	89¾-100⅛	110¼-117¾
October	107 -118	108¼-116	77⅝- 89¾	104 -121½	93¼-102⅛	130 -145

* With the disappearance of quotations for No. 2 spring wheat after 1897, the price statistics are of less significance for the purposes of this study than would otherwise have been the case, as No. 1 northern spring wheat represents a grade of wheat superior to that grown in Wisconsin in recent years.

TABLE VIII.—Continued.

	1882.	1883.	1884.	1885.	1886.	1887.
Jannary	128 -140¼	93 -103¼	87½-95½	74⅛-80½	77 -84⅛	77¼-80¼
April	126 -135	101¼-110¾	79⅜-96	74½-91¾	76 -80¾	76⅝-78⅞
July	106 -129¾	95½-103½	78⅜-85⅛	85½-89½	73 -81¼	68 -72⅝
October	92⅝- 96⅝	90 - 95¾	71½-77⅞	85 -91¾	69⅜-74¼	69½-71

	1888.	1889.	1890.	1891.	1892.	1893.
January	75⅜- 77¼	87 - 94½	69⅝-72½	82½- 93⅜	80⅜-85½	64½-67½
April	73 - 80⅛	77⅛- 88⅛	72¼-84¼	98¼-114½	76¼-84⅜	62½-66⅝
July	74⅝- 84	76⅜- 81	83 -91½	86¼- 93½	72 -77¼	55 -64¼
October	98¾-115½	71¼- 74¾	92⅜-98⅜	87¾- 94	64 -69¾	57⅛-61⅜

	1894.	1895.	1896.	1897.	1898.	1899.
January	58⅛-61⅜	50⅛-55⅞	56⅝-63	73½-79½	89 - 98	68½-76¼
April	55¾-61¾	55⅜-65¾	61½-67½	68 -80	98 -117	70½-75
July	50 -56	62¼-73¼	54⅜-59¼	70 -81	86 - 90	71¾-76
October	52⅛-55	56¾-60¾	64 -77	82 -89	82½- 70½	69 -74½

	1900.	1901.	1902.	1903.	1904.
January	63½-69	74 -78½	75¼-81½	75½-82¾	86½- 91
April	66 -68½	71 -76	72 -78	77 -81½	94 -102
July	75 -83	66 -73	76 -80	85½-90	98 -103
October	74½-81½	68¾-71½	72 -75¼	82½-87	112 -120

TABLE IX

Range[1] of quotations for the price of wheat at Chicago during the months of January, April, July, and October, 1840-1904. [No. 2 Spring, 1840 to April, 1858, inclusive, (Senate-Aldrich-Committee, *Report on Wholesale Prices, Wages and Transportation*, 1893, Pt. II, pp. 60-61); No. 1 Spring, July, 1858 to 1868, inclusive, and No. 2 Spring, 1869 to 1878, inclusive (*Trade and Commerce of Chicago*, Reports 1858-1878); No. 2 cash (contract) wheat,[2] 1879-1904, (*Report of the Trade and Commerce of Chicago* for 1904. p. 9.)]

	1840.	1841.	1842.	1843.	1844.	1845.
January		38-50		20-35		
April	38-50	37-44		40-44	50-63	
July	38-50	50-56		70-75	50-58	52*
October						

	1846.	1847.	1848.	1849.	1850.	1851
January			65-70	55-58	45- 55	50-60
April			75-82		55- 63	50-58
July	40†	40-55	85-90	36-65	90-100	
October		50-66	50-58	50-90	46- 53	

	1852.	1853.	1854.	1855.	1856.	1857.
January	31-42	70- 76	92- 95	108-120	115-120	85- 87
April	34-40	55- 65	100	135-145		84- 88
July	37-39	66- 75	95-100	150-155	100	126-127
October	48-56	94-100	90-105	129-130	102-103	73- 77

	1858.	1859.	1860.	1861.	1862.	1863.
January	53½-55	75-105	99 -102	80 -80¾	70½- 72⅛	100-120
April	61½-63	100-105	103½-115	83 -96	74½- 79	116-119½
July	66 -73	70-107	92 -110	58 -72½	81 - 93½	100-114
October	71	76- 88	81 - 89	70½-80	88 -101	103-118¼

	1864.	1865.	1866.	1867.	1868.	1869.
January	116-120	148-179	119-131	212-221	193 -215	112 -118½
April	115-131½	102-120	125-162	257-300	202 -220	101½-115
July	196-220⅛	104-129	138-195	198-235	180 -200	119¼-139
October	150-182	137-146¾	208-222½	185-203	117½-150	92 -112

[1] Occasionally but one quotation appears.

[2] From 1879 to 1897 the quotations for cash contract wheat approximate the quotations for No. 2 Spring wheat, and this is especially true of the minimum prices. On account of the elimination of this grade of wheat from the class of contract wheat in 1897, however, the quotations from 1898 to 1904 have less significance for the purposes of this study than would otherwise have been the case. [See *Report of the Trade and Commerce of Chicago* for 1897, pp. XXXVIII-XXXIX.]

* Average for the year 1845?

† Average for the year 1846?

TABLE IX.—Continued.

	1870.	1871.	1872.	1873.	1874.	1875.
January	75 - 84	108¾-129¾	120½-125	119½-126	114 -126⅝	88 - 90¾
April	73⅛- 94½	121 -132	119¼-135⅝	114 -125	119⅛-128	93 -105⅝
July	102½-131½	109 -129	120 -132	114¼-123½	108 -117½	99¾-128½
October	97 -112½	112½-124	106¾-121	93 -109½	81½- 99½	107¾-113½

	1876.	1877.	1878.	1879.	1880.	1881.
January	95 -102¼	124¾-131	102¼-109⅛	81½- 87¼	114 -132¾	95½-100
April	95½-105¼	126 -175	105⅝-114	83½- 91¼	105¼-114½	99½-105⅝
July	83 -105¼	127 -148¼	89 -105½	88½-104½	86⅝- 96½	108¼-122
October	105¼-116	106¾-114½	77 - 87⅞	104¼-121⅛	92¾-101⅞	130 -143½

	1882.	1883.	1884.	1885.	1886.	1887.
January	125¼-135⅜	93⅜-104½	88½- 95⅝	76 - 81½	77 - 84¾	77⅛- 80¼
April	132 -142	99 -112¼	75-⅜ 94¾	77½- 91¾	72⅜- 80½	76⅝- 83¾
July	126 -136	96½-103¼	79¼- 84⅝	85¼- 90½	73 - 79¾	67⅞- 71¼
October	92¼- 97	89½- 96⅜	70⅞- 74⅝	84½- 91¼	69¾- 74⅝	69⅛- 72⅝

	1888.	1889.	1890.	1891.	1892.	1893.
January	75¼- 78½	92 -102⅛	74½- 78⅛	87⅛- 96⅛	84½- 90½	72 - 78¼
April	71 - 81¾	79⅝- 98½	77½- 90	102 -112¾	76⅝- 85½	70½- 88
July	79½- 85½	76¾- 85	85 - 94	84¾- 94⅝	76 - 80	54⅜- 66¼
October	102⅞-117½	77⅞- 82¼	96⅛-103½	92½- 99	69¼- 74¾	60¾- 66½

	1894.	1895.	1896.	1897.	1898.	1899.
January	59¼- 63	48⅞- 55	55¾- 68⅞	73 - 81	89⅛-110	66½- 76
April	57½- 63¾	53⅞- 63½	61¼- 71	66½- 77½	101 -123½	70 - 76½
July	50⅜- 58⅜	61⅛- 71⅛	54¼- 62¼	68¼- 78¾	65¾- 88	68⅝- 75¾
October	50½- 52¼	57¾- 61⅜	65½- 81½	83 - 97	62 - 70¼	68½- 74¾

	1900.	1901.	1902.	1903.	1904.
January	61½- 67⅛	71⅜- 76⅜	74 - 80½	70¾- 79¼	81¼- 93½
April	64¾- 67¾	69½- 74⅞	70 - 76¾	71⅜- 79	85½- 96⅜
July	74 - 81½	63⅛- 71¾	71½- 79	75 - 84	94½-112
October	71⅜- 77⅜	66¾- 71½	67½- 75½	76¾- 88	109¾-122

TABLE X

Price of wheat[1] at New York City for the months of January, April, July, and October, 1840–1904 [No. 2 spring, 1840–1861 inclusive (Senate—Aldrich—Committee, *Report on Wholesale Prices, Wages and Transportation*, 1893, Pt. II, pp. 62–63); Milwaukee Club, 1862–1882 inclusive (Reports *New York Produce Exchange*); No. 2 spring, 1883–1891 inclusive (Aldrich report as above); No. 1 northern spring, 1892–1904 (*New York Produce Exchange.*)]

	1840.	1841.	1842.	1843.	1844.	1845.
January	108–110	98–100	125	87⅛– 89	96	95– 98
April	107–108	90–100	125	90 – 95	101	97–100
July	98	117	123	102 –108	97–100	100–105
October	100	140	75– 85	90 – 93	87– 90	90– 96

	1846.	1847.	1848.	1849.	1850.	1851.
January	124	115	120-130	108–112	95–112	105–109
April	110–115	135–140	125–129	100–102	100–112	95–100
July	85– 95	160–180	115–120	100–103	115–120	93– 97½
October	85– 90	114–119	112–115	95–112	88–105	78– 85

	1852.	1853.	1854.	1855.	1856.	1857.
January	100-105	132	187½–195	230–237½	177	170
April	106–110	120–122	180 –195	228–230	165–176	158
July	97–100	120-122	175 –210	200–210	145	157
October	104–105½	146–150.	160 –170	168–177	140–145	105–112

	1858.	1859.	1860.	1861.	1862.	1863.
January	110–115	120	130	118–122½	132	145
April	115	158	122	125–127½	126¾	152½
July	80– 90	109	128	72– 89	113	122½
October	108	125	115–118	115–119	124	134

	1864.	1865.	1866.	1867.	1868.	1869.
January	153⅛	220	176	246	249	165
April	171	161	177	264	257	147½
July	242¼	136½	219	241	199¾	156
October	190	178½	239	231	174	140¼

[1] The quotations from 1862 to April, 1875, represent *average* prices; from July 1875 to 1882 inclusive, the minimum and maximum quotations are *average* minimum and maximum quotations. In comparing New York City prices with Chicago and Milwaukee prices, account must be taken of the fact that the former are thus, in part, *average* prices.

Satisfactory quotations for Milwaukee Club or for Milwaukee or Chicago No. 2 spring wheat at New York City are not available after 1882.

The quotations for No. 1 northern spring from 1892 to 1896 are for wheat "delivered"; from 1897 to 1904 the prices are for wheat "f. o. b."

TABLE X.—Continued.

	1870.	1871.	1872.	1873.	1874.	1875.
January.....	122	152½	155¼	167¾	162 7/10	113⅛
April.....	117	158	158⅜	166 1/7	159⅛	122⅝
July.....	141½	142⅛	151⅛	145¾	135⅝	130½–130 9/10
October.....	132	153⅛	176⅝	140⅜	111	130¼–131⅛

	1876.	1877.	1878.	1879.	1880.	1881.
January.	123¼–124	144¾–146 2/9	131	101 9/16	141⅛–142¼	116½–117
April ...	125½–126	167⅛–169	127½ –127 9/16	103⅛	125⅛–128	123 9/16
July.. ...	103 –106⅛	163⅞–165⅛	105 9/10–107¾	110¼–113	110¼	121⅛–122 9/16
October .	125⅞–126¼	132⅞–133⅝	97 1/10*	134 –135 7/10	112 15/26	140

	1882.	1883.	1884.	1885.	1886.	1887.
January.....	140	110	107	86	92½	91 –93
April...	142⅜ –142 13/16	102–113	98¼	90½	91¼	91½–93½
July.	128 15/16–129 7/16	108	90– 90½	94¾–95	81¾	83¼–83½
October.....	106¾ –112	104	85⅝	90 –91	83½	80 –81

	1888.	1889.	1890.	1891.	1892.	1893.
January.....	87¾– 92¾	108 –110⅛	78¼– 86	104½	101¾–108⅛	82 2/9–87
April.....	84½– 84¾	95 –100	89 – 91	111	92⅜–101⅜	80¾–85⅝
July.....	89⅛– 89½	89⅜– 90	91	103⅛–103½	84¾– 90½	65¾–73½
October.....	105 –107¾	77 – 89	100 –103½	104⅞–105	79¾– 84¾	68⅛–74½

	1894.	1895.	1896.	1897.	1898.	1899.
January.....	70¼–74½	65¾–72⅛	66¾–74⅞	83¾– 96⅜	100 –112¾	77¼–87¼
April.....	68¼–74	67⅜–76¼	71⅝–76¼	76¼– 89⅞	105 –134	81⅜ 87¾
July.....	62⅝–69½	70 –79¾	61⅝–67⅛	76¼– 90	82 – 95	78⅜–83⅜
October.....	62⅝–66⅛	64⅜–68⅜	72¼–86⅝	94⅞–103	69¾– 80½	77⅜–83¼

	1900.	1901.	1902.	1903.	1904.
Jauuary.	75 –80⅝	82¾–88¾	83¾–90⅜	85 –91⅛	96⅞–101¾
April.....	75¼–80	81¾–90⅛	79⅜–86⅛	85½–90½	96⅞–106½
July.....	81 –92	72¼–80⅜	79¾–84⅞	90⅛–96⅝	99¾–110½
October.....	80⅜–88½	73⅞–78⅞	78 –84¼	88⅝–93⅝	118½–131

* This quotation is for September, 1878.

TABLE XI.

Per capita production of barley in the counties of the wheat area in Wisconsin, producing one bushel or more per capita.

[Federal Census, 1849 to 1899.]

Counties.	1849. Bushels.	1859. Bushels.	1869. Bushels.	1879. Bushels.	1889. Bushels.	1899. Bushels.
Adams	.....	.....	.....	.....	.....	1.3
Barron	.....	.....	.....	4.4	.....	1.9
Brown	.....	.....	.....	1.4	1.8	3.1
Buffalo	.....	2.1	4.0	3.3	4.4	14.6
Calumet	.....	.....	1.0	9.4	34.1	68.3
Chippewa	.....	.....	1.4	2.8	.....	1.6
Clark	.....	.....	.....	.....	.....	1.9
Columbia	.....	1.2	1.8	5.3	24.3	9.8
Crawford	.....	.....	.....	1.8	1.8	.....
Dane	1.1	1.4	2.8	9.0	14.9	5.8
Dodge	.....	1.9	2.0	9.4	61.1	73.8
Door	.....	.....	.....	1.3	1.5	2.2
Dunn	.....	.....	2.1	2.7	.....	3.4
Eau Claire	.....	.....	1.7	1.1	1.0	3.0
Fond du Lac	.....	1.4	1.3	8.7	34.1	49.0
Grant	.....	.....	1.1	1.4	1.0	3.5
Green	.....	.....	.....	.....	1.8	3.5
Green Lake	.....	1.7	1.4	2.4	17.5	18.1
Iowa	.....	.....	1.6	1.7	.....	1.6
Jackson	.....	.....	1.9	4.9	.....	1.8
Jefferson	.....	.....	1.5	8.1	21.8	15.1
Juneau	.....	.....	.....	.....	.....	1.5
Kenosha	1.0	2.1	3.4	2.4	7.1	.....
Kewaunee	.....	2.6	.....	1.5	3.4	7.1
La Crosse	.....	.....	1.3	1.7	2.0	3.7
Lafayette	.....	.....	3.3	1.0	3.3	2.1
Langlade	.....	.....	.....	.....	.....	1.5
Manitowoc	.....	.....	.....	3.2	7.3	14.3
Marathon	.....	.....	.....	.....	.....	2.5
Milwaukee	.....	.....	.....	1.5	1.5	.....
Monroe	.....	.....	.....	2.3	2.7	3.6
Outagamie	.....	.....	.....	2.7	3.1	3.3
Ozaukee	.....	1.3	2.3	8.9	39.1	47.7
Pepin	.....	.....	1.6	1.5	3.1	24.1
Pierce	.....	.....	2.4	3.0	13.2	29.3
Polk	.....	.....	.....	1.5	1.5	3.9
Racine	.....	.....	1.0	1.6	5.0	1.4
Richland	.....	.....	.....	.....	.....	3.3
Rock	.....	2.8	5.2	13.7	19.9	10.8
St. Croix	.....	.....	2.5	1.5	1.0	7.3
Sauk	.....	.....	.....	1.6	1.4	2.3
Shawano	.....	.....	.....	.....	.....	2.8
Sheboygan	.....	.....	1.8	7.0	18.5	25.8
Trempealeau	.....	.....	1.6	4.1	1.9	4.6
Vernon	.....	.....	1.8	4.0	5.3	5.9
Walworth	1.8	1.6	4.4	8.9	23.4	10.9
Washington	.....	2.2	2.8	8.7	47.3	65.0
Waukesha	2.7	.....	2.0	10.6	35.8	20.5
Waupaca	.....	.....	.....	1.5	1.1	1.9
Winnebago	.....	.....	.....	1.1	3.8	5.8
Wood	.....	.....	.....	.....	.....	1.8
State	0.7	0.9	1.6	3.8	9.0	9.0

TABLE XII.

Per capita production of rye in the counties of the wheat area in Wisconsin, producing one bushel or more per capita.

[Federal Census, 1849 to 1899.]

Counties.	1849. Bushels.	1859. Bushels.	1869. Bushels.	1879. Bushels.	1889. Bushels.	1899. Bushels.
Adams	.....	8.7	9.2	16.4	26.8	24.9
Barron	.....	.....	1.1	.....	.....	2.2
Brown	.....	.....	.....	1.3	4.9	2.7
Buffalo	.....	.....	1.0	.....	2.7	2.8
Burnett	.....	.....	.....	.....	3.3	2.1
Calumet	.....	.....	.....	.....	3.9	1.7
Chippewa	.....	1.3	.....	.....	.....	0.6
Clark	.....	1.7	.....	.....	.....	3.1
Columbia	.....	.....	1.4	2.3	4.9	4.4
Crawford	.....	.....	.....	1.3	2.2	1.6
Dane	.....	.....	.....	1.6	1.3	.....
Dodge	.....	.....	.....	.....	1.1	1.1
Door	.....	1.9	.....	1.1	2.7	5.3
Dunn	.....	.....	1.3	1.0	2.6	3.3
Eau Claire	.....	.....	.....	.....	2.2	3.8
Grant	.....	.....	.....	1.7	2.8	2.4
Green	.....	.....	1.1	2.3	2.9	1.8
Green Lake	.....	1.4	1.3	3.3	5.6	5.1
Iowa	.....	.....	.....	.....	2.0	2.3
Jackson	.....	.....	1.1	1.0	3.6	5.8
Jefferson	.....	.....	1.0	2.0	2.5	2.2
Juneau	.....	.....	1.4	2.9	4.1	4.4
Kenosha	.....	.....	1.0	1.0	.....	.....
Kewaunee	.....	10.9	2.1	2.9	6.3	7.0
La Crosse	.....	.....	1.1	1.7	1.9	1.4
Lafayette	.....	.....	.....	1.2	1.8	1.1
Langlade	.....	.....	.....	.....	.....	1.0
Manitowoc	.....	1.5	2.8	2.3	6.1	6.3
Marathon	.....	.....	.....	.....	1.3	2.3
Marinette	.....	.....	.....	.....	.....	1.0
Marquette	.....	6.5	9.6	14.6	18.9	21.8
Monroe	.....	.....	.....	1.3	3.9	3.6
Oconto	.....	.....	.....	.....	1.1	1.9
Outagamie	.....	.....	.....	.....	2.2	1.1
Ozaukee	.....	8.9	4.6	3.1	3.7	3.2
Pepin	.....	.....	1.0	2.6	4.1	5.7
Pierce	.....	.....	.....	.....	8.7	5.5
Polk	.....	.....	.....	.....	3.9	2.7
Portage	.....	1.1	5.5	6.3	7.5	7.4
Racine	.....	.....	.....	1.1	.....	1.0
Richland	.....	.....	.....	.....	1.6	1.4
Rock	.....	.....	3.1	3.2	1.6	1.6
St. Croix	.....	.....	.....	.....	4.1	6.5
Sauk	.....	.....	1.0	2.3	4.9	3.1
Shawano	.....	.....	1.0	2.3	1.9	3.5
Sheboygan	.....	3.2	2.9	2.4	3.7	3.6
Trempealeau	.....	.....	.....	.....	3.6	3.3
Walworth	.....	.....	1.6	1.3	.....	.....
Washington	2.2	3.3	3.2	3.7	3.8	3.8
Waukesha	.....	2.2	2.3	3.3	1.9	4.3
Waupaca	.....	1.1	1.6	3.3	4.2	5.3
Waushara	.....	4.4	5.7	12.6	1.6	1.7
Winnebago	.....	.....	.....	.....	1.8	.....
Wood	.....	.....	1.8	1.9	2.1	2.8
State	0.8	1.1	1.8	1.7	2.5+	2.5—

TABLE XIII.

Per capita production of oats in the counties of the wheat area in Wisconsin.

[Federal Census, 1849 to 1899.]

Counties.	1849. Bushels.	1859. Bushels.	1869. Bushels.	1879. Bushels.	1889. Bushels.	1899. Bushels.
Adams	10.2	6.3	13.4	19.4	36.9	33.3
Barron	.....	.....	28.8	23.6	23.1	33.8
Brown	2.9	2.2	6.1	10.3	25.1	33.6
Buffalo	.....	8.4	28.4	34.1	64.4	96.3
Burnett	.....	.....	1.9	6.8	11.5	13.3
Calumet	4.8	9.0	14.2	18.9	39.2	62.2
Chippewa	27.0	11.2	20.1	31.5	48.4	45.8
Clark	.....	5.3	10.1	13.7	25.7	30.7
Columbia	12.5	21.7	23.5	30.9	64.4	75.9
Crawford	.....	4.3	12.3	23.9	49.6	53.5
Dane	14.6	20.5	28.0	43.1	61.6	71.4
Dodge	10.6	15.5	19.3	25.3	41.3	64.3
Door	.....	1.8	4.5	10.8	15.8	23.4
Dunn	.....	11.5	24.6	34.6	51.9	63.0
Eau Claire	.....	13.0	27.3	23.9	29.9	43.3
Fond du Lac	6.9	18.2	19.0	23.4	45.7	65.1
Grant	12.6	22.8	37.7	48.8	82.6	87.5
Green	17.8	18.1	31.4	62.1	80.5	93.1
Green Lake	.....	21.5	22.8	22.1	50.7	79.1
Iowa	11.5	20 0	32.7	56.3	105.7	103.3
Jackson	.....	27.2	35.2	30.9	65.6	79.6
Jefferson	7.7	10.3	13.8	19.4	32.8	58 2
Juneau	.....	9.1	15.9	25.6	44.9	46.9
Kenosha	21.5	17.4	27.3	45.4	46.3	50.4
Kewaunee	.....	11.7	7.2	16.5	24.4	34.9
La Crosse	.....	16.1	14.1	15.9	23.8	24.9
Lafayette	15.2	34.0	67.0	80.8	114.0	108.1
Langlade	.....	.....	.....	8.1	7.4	15.8
Lincoln	.....	.....	.....	6.4	3.9	5.7
Manitowoc	1.4	2.7	11.6	18.6	27.8	37.8
Marathon	.....	2.7	13.0	10.9	19.6	19.6
Marinette	.....	.....	.....	3.2	5.6	8.9
Marquette	7.6	7.0	9.6	14.7	32.3	44.5
Milwaukee	4.0	3.4	3.3	3.6	2.8	2.9
Monroe	.....	11.1	17.6	26.3	50.5	57 6
Oconto	.....	0.9	3.0	6.3	21.1	32.0
Outagamie	.....	5.9	10.8	17.5	34.4	45.1
Ozaukee	.....	14.0	16.6	26.4	34.9	54.0
Pepin	.....	5.7	17.0	21.7	35.3	56.5
Pierce	.....	15.3	17.2	22.8	56.5	59.3
Polk	.....	10.7	15.3	18.8	37.5	49.7
Portage	2.7	11.2	14.4	12.7	29.8	24.9
Racine	11.5	10.5	14.7	23.2	27.6	30.2
Richland	2.7	6.3	11.7	19.9	40.8	50.4
Rock	23.5	25.0	30.0	45.5	45.8	51.5
St. Croix	1.1	18.2	40.5	38.4	100.6	91.6
Sauk	.....	17.4	21.3	32.8	59.8	75.4
Shawano	.....	1.6	8.7	13.0	24.6	31.1
Sheboygan	4.4	9.8	13.1	19.7	27.1	34.0
Trempealeau	.....	16.3	22.5	39.0	84.3	105.6
Vernon	.....	20.8	23.8	35.7	68.0	66.8
Walworth	21.1	20.3	26.8	38.8	40.4	75.3
Washington	5.3	13.0	17.2	24.5	37.7	52.8
Waukesha	12.9	14.9	17.7	28.0	39.9	62.9
Waupaca	.....	3.9	7.1	13.0	31.6	37.5
Waushara	.....	6.9	9.4	19.6	45.1	41.6
Winnebago	2.9	11.9	9.7	13.0	26.6	33.8
Wood	.....	1.2	4.4	6.0	11.2	12.8
State	11.2	14.3	19.1	25.0	36.0	40.6

TABLE XIV.

Per capita production of corn in counties of the wheat area in Wisconsin.

[Federal Census, 1849 to 1899.]

Counties.	1849. Bushels.	1859. Bushels.	1869. Bushels.	1879. Bushels.	1889. Bushels.	1899. Bushels.
Adams	5.1	7.7	17.3	32.4	50.4	63.1
Barron	.....	.....	1.8	2.7	6.1	4.8
Brown	1.8	0.7	0.5	2.2	1.8	3.3
Buffalo	.....	13.3	17.5	19.1	34.3	45 2
Burnett	.....	.....	0.7	2.1	5.7	6.9
Calumet	6.0	5.2	3.4	9.7	9.9	17.8
Chippewa	15.1	1.7	3.9	9.1	12.4	8.6
Clark	.....	5.0	2.7	6.6	5.1	7.1
Columbia	8.1	10.9	18.3	44.2	46.6	74.6
Crawford	.....	7.9	20.0	36.4	33.3	48.2
Dane	7.3	12.9	17.6	56.0	39.6	68.7
Dodge	6.6	5.7	13.3	24.3	23.5	45.1
Door	.....	1.7	0.3	0.9	0.7	2.3
Dunn	.....	7.9	7.5	18.8	31.3	29.8
Eau Claire	.....	8.0	6.5	12.8	14.3	14.6
Fond du Lac	5.1	4.4	6.2	15.6	18.5	29.2
Grant	12.4	27.9	45.9	90.0	78.2	100.9
Green	15.6	27.3	40.1	100.6	70.2	118 5
Green Lake	.....	12.4	19.1	34.9	38.2	53.3
Iowa	8.5	16.2	28.7	70.8	56.6	84.9
Jackson	.....	8.7	8.9	19.6	27.0	29.9
Jefferson	5.3	8.3	17.0	30.8	32.6	51.9
Juneau	.....	6.5	9.3	21.1	17.6	26.9
Kenosha	9.3	11.3	20.4	46.2	27.8	33.8
Kewaunee	.....	4.2	.....	0.1	0.4	0.4
La Crosse	.....	14.1	9.4	14.0	16.8	17.9
Lafayette	7.9	25.6	57.1	117.7	98.0	136.3
Manitowoc	.....	0.1	.....	0.5	0.8	2.1
Marathon	3.0	1.1	.....	1.1	0.7	2.1
Marquette	4.9	10.5	14.4	37.8	46.1	64.1
Milwaukee	1.2	1.4	1.8	1.6	0.7	1.1
Monroe	.....	9.9	11.0	19.1	22.3	24.2
Oconto	.....	0.6	0.3	2.5	2.1	6.4
Outagamie	.....	4.6	3.0	11.9	9.1	15.6
Ozaukee	.....	1.9	1.8	7.2	6.2	12.1
Pepin	.....	11.6	23.2	25.4	38.7	44.8
Pierce	.....	12.9	8.1	17.6	24.5	26.3
Polk	.....	6.8	3.1	4.5	13.2	9.9
Portage	.....	5.1	6.0	15.7	16.2	13.1
Racine	5.2	5.7	14.1	17.9	12.1	18.8
Richland	12.3	23.4	21.9	48.0	40.6	64.7
Rock	14.5	15.6	29.1	65.8	48.4	67.3
St. Croix	1.7	8.6	3.8	9.8	21.0	11.8
Sauk	.....	18.7	17.2	33.5	33.3	53.2
Shawano	.....	2.2	2.5	5.8	5.8	8.6
Sheboygan	0.9	2.5	2.3	9.8	7.9	12.8
Trempealeau	.....	18.1	13.1	25.7	39.5	36.9
Vernon	.....	15.4	15.6	30.4	36.8	33 1
Walworth	12.0	12.2	31.9	59.9	42.2	83.9
Washington	1.8	3.4	9.0	18.7	14.1	29.2
Waukesha	4.0	7.2	18.3	28.1	21.4	32.9
Waupaca	.....	7.5	5.6	14.3	15.2	15.5
Waushara	.....	15.7	12.7	31.8	45.7	48.4
Winnebago	3.4	6.0	5.1	13.5	12.3	15.6
State	6.5	9.7	14.2	26.0	20.2	25.8

TABLE XV.

Per capita production of potatoes in counties of the wheat area in Wisconsin.

[Federal Census, 1849 to 1899]

Counties.	1849. Bushels.	1859. Bushels.	1869. Bushels.	1879. Bushels.	1889. Bushels.	1899. Bushels.
Adams	4.0	4.3	9.7	8.3	28.3	77.1
Barron	.....	.....	3.4	6.0	17.8	23.5
Brown	4.0	2.5	2.7	4.7	5.9	4.4
Buffalo	.....	15.5	5.9	7.7	14.7	11.9
Burnett	.....	.....	2.7	4.7	15.0	34.0
Calumet	5.2	5.2	3.3	4.8	5.9	6.8
Chippewa	14.1	6.1	8.1	7.0	16.1	18.6
Clark	.....	11.2	5.0	9.2	9.4	10.3
Columbia	5.3	4.8	7.0	7.0	13.9	24.8
Crawford	.....	3.0	6.1	8.9	9.3	7.9
Dane	6.4	2.9	6.5	5.4	5.9	7.5
Dodge	8.2	4.3	7.5	6.4	8.3	11.4
Door	.....	8.1	8.8	6.6	8.0	13.6
Dunn	.....	10.9	4.7	7.0	16.6	25.6
Eau Claire	.....	9.0	2.7	3.7	9.3	9.9
Fond du Lac	5.9	4.3	5.2	5.8	8.8	11.8
Grant	2.8	4.8	7.5	8.4	10.1	9.9
Green	1.9	3.7	7.8	6.5	6.9	6.7
Green Lake	.....	5.2	6.9	6.8	9.3	17.3
Iowa	3.0	4.5	5.9	6.9	8.1	7.3
Jackson	.....	8.7	5.0	4.9	10.9	10.9
Jefferson	3.9	2.5	8.7	5.9	7.3	7.9
Juneau	.....	4.5	7.9	11.7	18.7	26.6
Kenosha	6.4	5.9	10.2	6.5	8.8	7.1
Kewaunee	.....	15.2	5.8	5.3	7.1	7.7
La Crosse	.....	8.4	3.2	4.3	6.2	4.6
Lafayette	1.6	5.1	8.8	8.3	8.4	7.7
Langlade	.....	.....	.....	15.8	7.0	7.4
Lincoln	.....	.....	.....	5.6	3.6	4.7
Manitowoc	1.9	2.0	3.2	4.8	6.3	6.5
Marathon	4.0	7.8	3.7	7.1	8.9	10.4
Marinette	.....	.....	.....	5.5	5.6	8.7
Marquette	4.2	7.3	8.5	9.9	16.9	86.9
Milwaukee	2.3	2.3	2.4	2.7	2.2	3.1
Monroe	.....	4.9	5.5	7.3	15.7	10.5
Oconto	.....	3.8	4.3	9.2	8.1	10.1
Outagamie	.....	7.3	3.5	7.3	6.9	9.4
Ozaukee	.....	6.0	5.4	9.7	10.0	17.4
Pepin	.....	8.2	5.8	7.5	13.9	10.1
Pierce	.....	11.0	4.7	7.4	20.2	10.8
Polk	.....	12.1	4.5	6.6	16.2	13.7
Portage	1.0	6.4	10.5	12.4	53.4	67.1
Racine	3.9	4.5	6.1	5.5	7.2	8.1
Richland	2.1	5.2	6.9	6.6	8.7	6.9
Rock	4.9	4.5	11.3	6.5	6.4	6.1
St. Croix	2.1	10.4	5.6	7.6	25.8	11.0
Sauk	.....	5.8	8.8	10.9	13.9	23.6
Shawano	.....	4.8	6.4	6.5	8.2	11.4
Sheboygan	4.4	5.5	4.3	5.7	5.7	9.1
Trempealeau	.....	13.1	4.4	5.4	12.2	9.9
Vernon	.....	5.4	4.4	6.4	12.6	8.8
Walworth	5.6	4.5	11.3	6.3	7.9	7.4
Washburn	.....	.....	.....	.....	3.5	9.4
Washington	6.3	4.9	8.0	8.0	10.4	16.0
Waukesha	5.2	7.0	14.3	11.5	13.7	21.4
Waupaca	.....	6.9	6.2	11.9	47.1	49.7
Waushara	.....	7.1	8.1	9.4	49.9	119.3
Winnebago	3.3	4.5	2.3	4.5	5.0	5.2
Wood	.....	2.5	7.3	6.8	8.4	10.6
State	4.6	4.9	6.3	6.5	9.9	11.9

TABLE XVI.

Per capita production of hay in counties of the wheat area in Wisconsin, producing 0.90 tons or more per capita.

[Federal Census, 1849 to 1899]

Counties.	1849. Tons.	1859. Tons.	1869. Tons.	1879. Tons.	1889. Tons.	1899. Tons.
Adams	.....	1.23	1.56	2.02	2.45	2.58
Barron	.....	.....	.....	.....	1.68	2.38
Brown	.....	.....	.....	.....	1.09	1.23
Buffalo	.....	1.75	1.48	1.72	2.76	2.98
Burnett	.....	.....	.....	1.64	1.87	2.42
Calumet	.....	.....	1.07	1.03	2.11	1.71
Chippewa	2.11	.....	0.99	.....	1.38	1.86
Clark	.....	1.43	1.11	1.79	1.92	2.54
Columbia	1.41	1.49	1.53	2.56	2.93	2.17
Crawford	.....	.....	0.94	1.29	1.83	2.50
Dane	1.30	1.39	1.36	2.04	2.54	1.79
Dodge	1.33	1.31	1.50	2.03	2.81	2.72
Door	.....	.....	.....	.....	1.78	2.01
Dunn	.....	0.97	1.30	1.32	1.92	2.35
Eau Claire	.....	0.93	.....	.....	1.16	1.45
Fond du Lac	0.97	1.44	1.64	1.83	2.59	1.78
Grant	.....	1.07	1.03	1.66	2.82	2.38
Green	1.24	1.97	1.83	3.09	3.90	2.82
Green Lake	.....	2.09	2.25	2.35	2.61	2.49
Iowa	.....	1.49	1.55	2.29	3.25	3.55
Jackson	.....	0.95	0.90	1.32	2.29	2.57
Jefferson	0.93	1.18	1.47	2.23	2.86	2.46
Juneau	.....	1.03	1.25	1.60	1.74	2.23
Kenosha	2.26	2.64	3.38	3.39	3.84	2.58
Kewaunee	.....	1.29	.....	.....	2.09	2.18
La Crosse	.....	1.26	.....	0.93	1.12	1.17
Lafayette	.....	1.66	1.71	2.59	3.65	2.96
Langlade	.....	.....	.....	.....	0.93	1.33
Manitowoc	.....	.....	.....	0.90	1.85	1.66
Marathon	.....	.....	.....	.....	1.29	1.70
Marquette	.....	1.84	2.51	2.92	3.05	5.67
Monroe	.....	0.98	1.23	1.80	2.17	2.44
Oconto	.....	.....	.....	.....	1.18	1.70
Outagamie	.....	.....	1.01	0.92	1.12	1.22
Ozaukee	.....	.....	0.95	1.51	2.78	1.93
Pepin	.....	0.90	1.40	1.34	1.85	1.76
Pierce	.....	.....	.....	1.25	1.88	2.15
Polk	.....	.....	0.90	1.09	1.79	2.76
Portage	.....	.....	0.92	.....	1.22	1.57
Racine	0.97	1.35	1.61	1.68	1.62	1.20
Richland	1.25	0.97	1.10	1.72	2.65	3.51
Rock	1.11	1.11	1.33	1.96	2.38	1.15
St. Croix	.....	.....	.....	1.00	2.09	2.61
Sauk	.....	1.24	1.24	1.72	2.01	2.12
Shawano	.....	.....	.....	.....	1.15	1.44
Sheboygan	.....	.....	1.24	1.89	1.75	1.36
Trempealeau	.....	1.69	1.75	2.06	3.44	3.38
Vernon	.....	.....	1.09	1.50	2.36	2.70
Walworth	1.52	1.60	2.03	3.00	3.65	2.14
Washington	.....	.....	0.96	1.40	2.35	1.66
Waukesha	1.17	1.31	1.43	2.19	2.55	2.06
Waupaca	.....	.....	0.93	1.29	1.66	2.09
Waushara	.....	1.50	1.19	2.04	2.42	2.74
Winnebago	.....	1.52	1.27	1.39	1.48	1.22
Wood	.....	.....	0.97	1.06	1.29	1.53
State	0.90	1.10	1.22	1.45	1.32	1.58

TABLE XVII.

Per capita number of horses in the counties of the wheat area in Wisconsin having twenty or more horses per hundred of population.

[Federal Census, 1849 to 1899]

Counties.	1849.	1859.	1869.	1879.	1889.	1899.
Adams			0.25	0.34	0.47	0.59
Barron						.28
Brown						.22
Buffalo			.27	.36	.45	.52
Burnett						.28
Calumet			.23	.33	.37	.45
Chippewa	0.38				.22	.27
Clark					.22	.36
Columbia		0.21	.34	.39	.49	.45
Crawford			.24	.36	.43	.44
Dane		.20	.37	.42	.43	.38
Dodge			.29	.36	.43	.41
Door					.22	.33
Dunn				.26	.30	.40
Eau Claire						.23
Fond du Lac			.25	.29	.35	.35
Grant		.24	.37	.42	.54	.55
Green	.31	.28	.41	.46	.54	.51
Green Lake		.20	.31	.37	.41	.40
Iowa		.21	.40	.44	.52	.54
Jackson			.22	.27	.32	.44
Jefferson			.25	.30	.35	.33
Juneau				.21	.31	.35
Kenosha	.27		.36	.35	.42	.29
Kewaunee				.22	.31	.38
Lafayette	.31		.46	.50	.65	.63
Manitowoc				.25	.30	.29
Marathon						.22
Marquette			.27	.36	.43	.48
Monroe				.31	.36	39
Oconto						.27
Outagamie				.21	.21	.23
Ozaukee			.24	.32	.36	.32
Pepin			.21	.27	.35	.40
Pierce				.29	.36	.41
Polk			.28	.20	.25	.38
Portage					.22	.27
Racine		.20	.20	.22	.23	
Richland			.24	.36	.45	.46
Rock		.26	.36	.36	.42	.34
St. Croix			.27	.33	.32	.36
Sauk			.26	.33	.40	.41
Shawano					.21	.28
Sheboygan			.20	.27	.24	.23
Trempealeau			.26	.35	.42	.46
Vernon			.25	.37	.48	.45
Walworth		.28	.43	.37	.49	.42
Washington			.24	.37	.43	.41
Waukesha		.22	.34	.35	.39	.35
Waupaca				.21	.29	.33
Waushara				.33	.45	.51
Winnebago				.20—		
State	.10—	.15	.24	.27	.27	.27

TABLE XVIII.

Per capita number of milch or dairy cows in the counties of the wheat area in Wisconsin having thirty or more cows per hundred of population.

[Federal Census, 1849 to 1899]

Counties.	1849.	1859.	1869.	1879.	1889.	1899.
Adams			0.81	0.59	0.63	0.62
Barron					.34	.39
Brown					.33	.38
Buffalo			.35	.43	.71	.85
Burnett					.47	.58
Calumet		.30—	.34	.44	.31	.31
Chippewa	.39				.30	.32
Clark				.30—	.42	.56
Columbia		.34	.33	.43	.59	.62
Crawford				.35	.56	.62
Dane	.30	.32	.34	.49	.68	.75
Dodge		.31	.35	.48	.77	.98
Door					.43	.47
Dunn			.30—	.35	.47	.53
Fond du Lac		.30	.31	.36	.67	.72
Grant			.35	.45	.74	.80
Green		.41	.49	.87	1.32	1.49
Green Lake		.36	.33	.39	.48	.67
Iowa	.30	.31	.41	.57	.95	1.23
Jackson				.35	.60	.63
Jefferson			.34	.57	.89	1.06
Juneau				.32	.42	.52
Kenosha		.45	.54	.58	.76	.64
Kewaunee				.36	.65	.73
La Crosse						.32
Lafayette	.32	.36	.46	.66	.92	1.24
Manitowoc	.50			.39	.68	.59
Marathon						.36
Marquette		.42	.42	.49	.56	.69
Monroe				.35	.49	.65
Oconto						.38
Outagamie				.31	.42	.48
Ozaukee		.31	.36	.51	.80	.72
Pepin					.50	.52
Pierce					.52	.43
Polk					.55	.70
Portage					.30	.35
Racine		.33			.37	.33
Richland				.41	.72	.86
Rock		.31	.33	.43	.52	.56
St. Croix				.30—	.50	.50
Sauk			.30	.41	.60	.76
Shawano				.30	.34	.50
Sheboygan	.66		.33	.56	.74	.61
Trempealeau			.38	.44	.93	.76
Vernon			.30—	.39	.59	.58
Walworth		.34	.38	.58	.92	1.10
Washington		.31	.35	.46	.71	.81
Waukesha		.35	.37	.47	.68	.66
Waupaca				.34	.44	.61
Waushara		.30—		.50	.75	.79
Winnebago					.32	.36
Wood						.33
State	.21	.25	.29	.38	.47	.48

TABLE XIX.

Per capita number of "other cattle" in the counties of the wheat area in Wisconsin having thirty or more cattle per hundred of population.

[Federal Census, 1849 to 1899]

Counties.	1849.	1859.	1869.	1879.	1889.	1899.
Adams	.....	.....	0.51	0.83	0.91	0.51
Barron	.....	.....	.....	.45	.46	.....
Brown	.....	.....	.....	.....	.30	.....
Buffalo	.....	.31	.73	.65	.90	.61
Burnett	.....	.....	.....	.39	.57	.38
Calumet	.....	.32	.....	.48	.58	.57
Chippewa	.57	.....	.....	.34	.34	.30
Clark	.....	.31	.....	.43	.55	.49
Columbia	.....	.44	.34	.72	.87	.65
Crawford	.....	.....	.40	.53	.88	.60
Dane	.87	.....	.34	.63	.73	.49
Dodge	.....	.32	.....	.56	63	.46
Door	.....	.....	.....	.....	.47	.46
Dunn	.....	.....	.34	.49	.63	.37
Fond du Lac	.....	.36	.....	.45	.60	.37
Grant	.....	.44	.59	.64	1.37	1.01
Green	.38	.55	.66	1.21	1.19	.92
Green Lake	.....	.55	.35	.53	.66	.51
Iowa	.....	.45	.69	1.09	1.65	1.38
Jackson	.....	.....	.....	.50	.74	.47
Jefferson	.....	.32	.32	.52	.49	.36
Juneau	.....	.....	.....	.47	.57	.35
Kenosha	.43	.47	.54	.67	.51	.30
Kewaunee	.....	.30	.....	.41	.61	.57
La Crosse	.....	.....	.....	.32	.30	.....
Lafayette	.30—	.54	.81	1.25	1.85	1.52
Manitowoc	.....	.....	.....	.37	. 46	.36
Marathon	.....	.....	.31	.32	.36	.35
Marquette	.....	.52	.53	.72	.85	.71
Monroe	.....	.....	.30	.50	.72	.38
Oconto	.....	.....	.....	.....	.37	.36
Outagamie	.....	.39	.....	.42	.42	.31
Ozaukee	.....	.....	.....	.48	.49	.31
Pepin	.....	.....	.49	.45	.51	.36
Pierce	.....	.....	.30—	.50	.63	.46
Polk	.....	.....	.....	.40	.71	.52
Portage	.....	.....	.....	.37	.31	.....
Racine	.35	.33	.....	.32	.....	.....
Richland	.....	.....	.36	.66	.91	.65
Rock	.35	.38	.36	.70	.65	.41
St. Croix	.....	.....	.....	.32	.57	.41
Sauk	.....	.32	.32	.62	.67	.47
Shawano	.....	.....	.....	.38	.53	.38
Sheboygan	.....	.....	.....	.48	.33	.....
Trempealeau	.....	.37	.38	.65	1.04	.55
Vernon	.....	.32	.49	.55	.93	.57
Walworth	.45	.39	.42	.62	.58	.49
Washington	.....	.33	.....	.49	.61	.39
Waukesha	.31	.32	.....	.42	.39	.....
Waupaca	.....	.....	.....	.44	.52	.37
Waushara	.....	.37	.....	.68	.59	.39
Winnebago	.....	.....	.....	.30	.....	.....
Wood	.....	.....	.....	.....	.31	.....
State	.25	.29	.31	.47	.49	.33

TABLE XX.

Per capita number of sheep in the counties of the wheat area in Wisconsin having forty or more sheep per hundred of population.

[Federal Census, 1849 to 1899]

Counties.	1849.	1859.	1869.	1879.	1889.	1899.
Adams			1.2	0.7	0.8	0.6
Barron					.5	.6
Buffalo			.5	.6	.7	1.1
Burnett					.5	
Calumet			.8	.5		
Clark				.5	.4	.8
Columbia		.5	1.7	2.6	1.9	1.5
Crawford			.6	.6	.7	.8
Dane	.5	.4	1.2	1.5	.6	.5
Dodge		.6	1.3	1.5	1.0	.7
Dunn			.4	.5	.7	.9
Fond du Lac		.7	1.4	1.9	1.5	1.2
Grant			.7			.7
Green	.6	.5	1.7	2.3	.8	.8
Green Lake		.8	2.4	3.4	2.7	1.9
Iowa			.6	.8	.5	.8
Jackson			.4			.6
Jefferson		.7	1.4	1.5	.6	
Juneau			.7	.6	.5	.5
Kenosha	1.3	1.5	3.7	4.8	3.1	1.0
Kewaunee					.4	.4
La Crosse			.5			
Lafayette			.8	1.0	.6	1.2
Manitowoc			.5	.4		
Marathon						.4
Marquette		.7	2.0	1.9	1.5	1.4
Monroe			.7	.7	.9	.8
Outagamie			.6	.7		
Pepin			.6	.6	.6	.7
Pierce			.6		1.0	1.3
Polk					.6	.4
Portage			.8	.7		
Racine	.7	.6	1.4	1.6	.7	
Richland			1.3	1.8	1.9	2.5
Rock	.6	.7	1.6	1.5	.6	.5
St. Croix					.6	.6
Sauk			.8	1.0	.8	.9
Shawano				.4	.5	.5
Sheboygan			1.0			
Trempealeau			.9	.7	.7	1.0
Vernon			1.1	1.1	1.5	1.5
Walworth	1.3	1.5	3.7	4.5	2.2	1.0
Washington			.7	.7	.7	.5
Waukesha	.6	1.3	2.5	3.2	1.7	1.1
Waupaca			.7	.9	.5	.4
Waushara			1.0	1.5	1.0	.9
Winnebago		.5	1.0	1.0	.5	
State	.4	.4	1.0	1.0	.5	.5

TABLE XXI.

Per capita number of swine in the counties of the wheat area of Wisconsin having fifty or more swine per hundred of population.

[Federal Census, 1849 to 1899]

Counties.	1849.	1859.	1869.	1879.	1889.	1899.
Adams				1.0	0.9	1.0
Buffalo		1.1	.6	.7	1.5	2.6
Calumet	.7	.6	.5	.5	.6	.9
Chippewa	1.5?					
Clark		.5				
Columbia	.6	(.4)		1.5	1.3	2.5
Crawford			.7	1.5	1.2	1.6
Dane	.8	(.4)	.5	1.8	1.6	2.3
Dodge	.7	(.4)		.8	1.0	1.8
Dunn		.5		.6	.8	1.3
Eau Claire						.6
Fond du Lac	.5			.5	.8	1.1
Grant	.9	.8	1.8	2.6	2.7	4.1
Green	.9	.9	1.5	2.5	2.1	4.4
Green Lake		(.4)		1.2	1.3	1.8
Iowa	.6	.6	1.1	2.4	2.8	3.0
Jackson				.6	.7	1.1
Jefferson				1.0	1.1	1.6
Juneau				.6	.8	1.0
Kenosha	.5	.5	.5	.9	.7	.9
Kewaunee		.5			.5	
La Crosse						.6
Lafayette	.5	.9	1.6	2.9	3.5	5.1
Marquette	.5		.5	1.1	1.0	1.5
Monroe		.5		.9	1.0	1.4
Outagamie		.6			.5	.8
Ozaukee		.5		.5	.5	.6
Pepin		.6	.6	.5	1.0	1.8
Pierce		.6		.5	.8	.9
Polk						.5
Portage				.5	.5	.5
Racine				.5	.5	.5
Richland		.7	.8	1.9	1.3	2.5
Rock	.7		.6	1.8	1.7	1.8
St. Croix					.8	.6
Sauk		.5	.6	1.3	1.6	2.3
Shawano					.5	.9
Sheboygan						.5
Trempealeau		.5		.7	1.3	1.3
Vernon		.6	.8	1.4		1.5
Walworth	.7	.5	.7	1.7	(.2)	2.7
Washington	.5	.5	.5	.8	1.1	1.1
Waukesha	.5	.5	.6	1.0	1.0	.9
Waupaca					.6	.7
Waushara		.5		.9	1.0	1.2
Winnebago						.6
State	.5	.4	.5	.9	.8	1.0

TABLE XXII.

Production of tobacco in the important tobacco-producing counties of the wheat area in Wisconsin.

[Federal Census, 1849 to 1899; State Census, 1904.]

Counties.	1869.[1] Pounds.	1879. Pounds.	1889. Pounds.	1899.[2] Pounds.	1904.[3] Pounds.
Chippewa	.....	.....	.....	5,520	130,560
Columbia	.....	.....	597,422	2,960,540	3,142,475
Crawford	.....	14,645	59,822	1,509,830	2,209,447
Dane	229,568	5,371,242	10,040,199	21,233,200	14,902,295
Dunn	.....	.....	.....	7,810	425,853
Grant	.....	34,350	48,990	166,300	294,250
Green	.....	117,571	277,703	419,470	238,400
Jackson	.....	.....	.....	.....	284,434
Jefferson	14,055	262,501	679,134	847,860	305,324
Juneau	.....	.....	.....	16,900	293,575
La Crosse	.....	.....	.....	38,850	158,650
Lafayette	.....	13,800	18,385	25,340	5,750
Monroe	.....	.....	.....	165,700	653,729
Pierce	.....	.....	18,365	5,680	26,150
Richland	9,126	11,814	.....	167,140	423,322
Rock	645,508	4,643,870	7,069,986	13,049,700	6,284,005
Trempealean	.....	.....	.....	.....	211,446
Vernon	.....	35,170	458,750	4,759,520	7,433,223
Walworth	46,136	9,360	44,062	41,250	9,000
State	960,813	10,608,423	19,389,166	45,600,480	37,651,498

[1] The total production of tobacco in 1859 was 87,340 lbs., of which Rock and Walworth counties produced 23,340 and 26,400 lbs., respectively. Only 1,268 lbs. of tobacco were produced in Wisconsin in 1849.

[2] Dodge, Racine, and Sauk counties produced 29,770, 21,590, and 12,700 pounds respectively.

[3] Barron, Buffalo, Dodge, Eau Claire, St. Croix, Shawano, and Waukesha counties produced 34,940, 39,130, 30,400, 21,140, 26,800, 10,000 and 15,000 pounds respectively.

TABLE XXIII.

Cash value of farms, per acre of improved land, in counties of the wheat area in Wisconsin at the Federal Census periods, 1849 to 1899.

Counties.	1850.	1860.	1870.[1]	1880.	1890.	1900.[2]
Adams	$25.59	$15.92	$21.31	$17.85	$26.02	$26.57
Barron	.....	.....	20.18	31.50	35.19	43.47
Brown	48.39	30.06	40.94	34.38	42.31	64.53
Buffalo	.....	33.82	32.50	27.59	22.96	41.44
Burnett	.....	.....	22.79	27.14	43.16	37.81
Calumet	46.11	34.98	49.90	53.50	64.79	80.56
Chippewa	15.63	21.72	26.58	30.96	41.17	36.72
Clark	.....	49.25	57.43	32.30	54.50	69.34
Columbia	24.94	30.52	33.11	31.79	39.41	56.97
Crawford	.....	38.93	29.12	23.33	25.31	37.18
Dane	21.65	33.76	42.53	34.10	49.06	70.41
Dodge	25.10	36.45	52.93	50.40	61.87	87.81
Door	.....	39.76	29.96	36.20	34.73	44.94
Dunn	.....	28.64	27.98	26.93	26.49	32.02
Eau Claire	.....	34.50	30.57	26.97	26.12	33.56
Fond du Lac	28.58	30.19	48.04	48.11	54.18	78.88
Grant	20.67	30.58	34.06	28.27	36.73	52.41
Green	22.08	26.61	32.72	34.53	47.62	60.26
Green Lake	.....	37.67	46.29	32.06	49.74	61.55
Iowa	20.58	34.83	39.25	29.58	33.54	50.38
Jackson	.....	30.89	26.53	23.18	26.86	33.39
Jefferson	23.27	26.67	41.03	45.92	65.22	94.43
Juneau	.....	28.32	27.24	25.85	32.22	44.02
Kenosha	38.97	32.14	34.18	33.55	55.61	77.28
Kewaunee	.....	42.70	34.95	39.35	39.04	46.99
La Crosse	.....	52.64	36.41	35.90	33.24	42.98
Lafayette	21.17	28.83	35.70	30.99	42.91	57.45
Langlade	.....	.....	.....	51.09	77.04	56.61
Lincoln	.....	.....	.....	52.18	64.42	69.20
Manitowoc	44.16	30.60	42.83	53.87	56.71	70.25
Marathon	21.86	38.05	39.02	46.34	51.09	59.16
Marinette	.....	.....	.....	31.64	53.21	48.39
Marquette	27.89	22.50	21.61	19.86	21.69	38.51
Milwaukee	51.82	94.61	91.05	121.75	262.88	263.91
Monroe	.....	39.41	37.93	31.19	29.22	43.56
Oconto	.....	22.68	39.00	35.81	53.30	51.91
Outagamie	.....	45.92	47.23	48.52	51.36	71.03
Ozaukee	.....	37.10	49.83	66.82	81.77	94.47
Pepin	.....	43.40	29.96	31.21	25.59	38.39
Pierce	.....	38.15	34.90	37.92	36.41	45.80
Polk	.....	36.36	45.67	41.22	34.95	43.53
Portage	13.78	29.63	24.01	21.22	29.44	37.56
Racine	28.13	31.33	38.71	43.78	88.36	86.10
Richland	41.36	43.32	35.26	31.09	35.26	44.60
Rock	21.82	42.56	42.02	46.76	60.33	72.47
St. Croix	17.03	34.99	28.21	34.62	31.46	36.77
Sauk	.....	34.02	36.49	33.24	38.56	48.89
Shawano	.....	53.34	35.73	36.87	44.56	55.73
Sheboygan	45.05	35.29	44.66	59.74	74.04	83.52
Trempealeau	.....	31.91	26.59	25.50	23.35	37.73
Vernon	.....	33.15	30.83	27.69	27.97	42.74
Walworth	25.72	31.84	42.57	44.71	62.30	86.80
Washburn	.....	.....	.....	.....	51.23	40.24
Washington	30.76	34.05	50.57	62.41	74.72	95.84
Waukesha	23.69	45.50	52.01	60.11	90.82	99.01
Waupaca	.....	39.64	34.42	30.37	38.85	52.80
Waushara	.....	25.79	26.74	23.64	26.51	35.78
Winnebago	37.76	45.94	49.40	50.56	57.19	74.80
Wood	.....	40.48	30.38	30.65	51.16	55.93
State	$27.29	$35.00	$40.73	$38.36	$48.76	$61.01

[1] Reduced one-fifth to allow for depreciation of currency.
[2] Including the value of buildings.

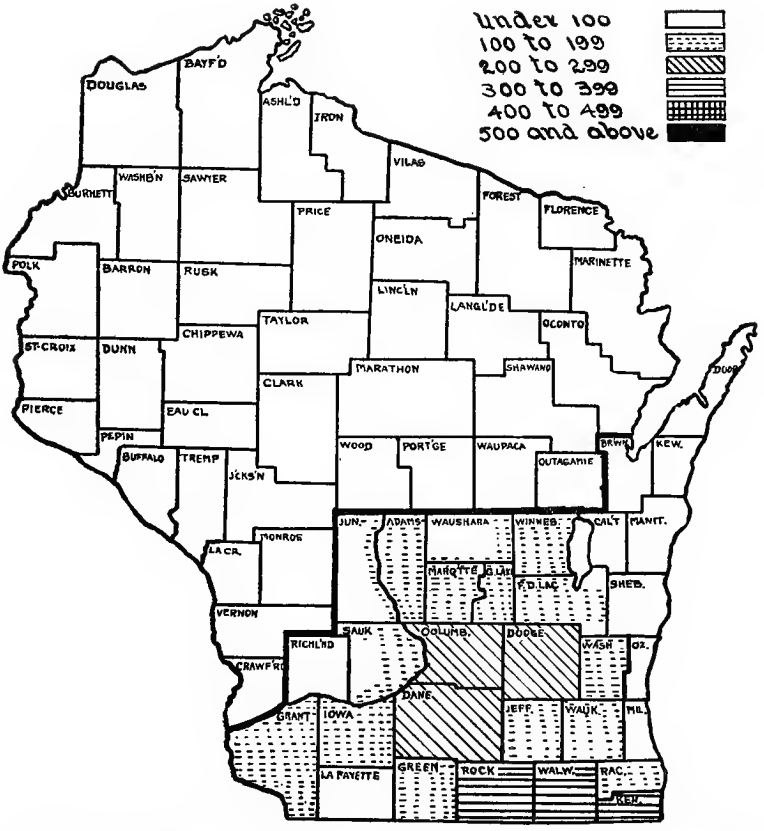

FIGURE 1.—SPECIALIZATION DENSITY IN THE PRODUCTION OF WHEAT IN WISCONSIN IN 1849.

(Based on Table III.)

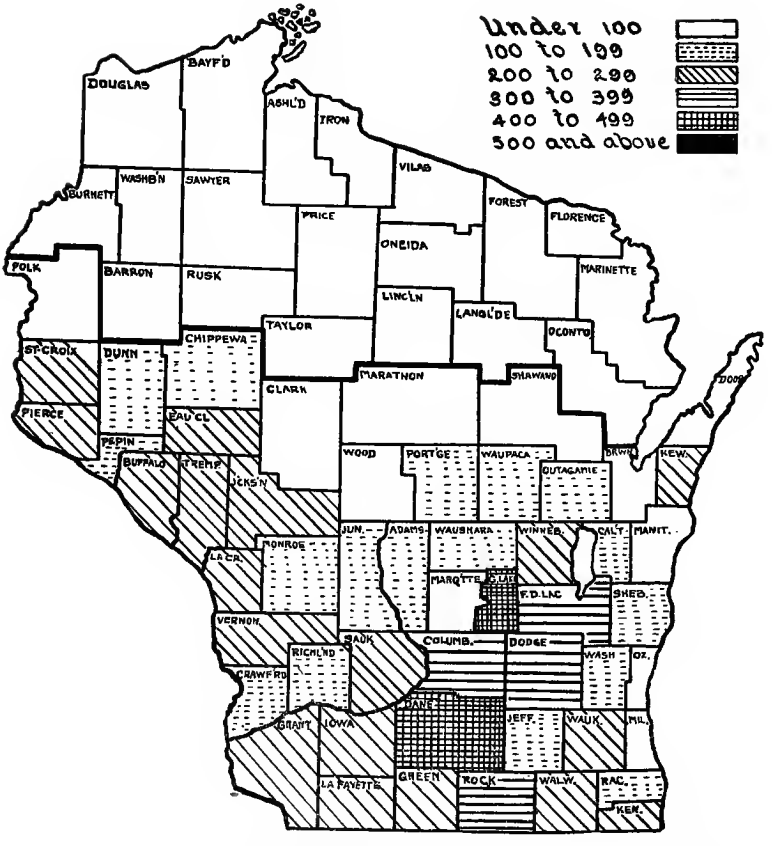

FIGURE 2.—SPECIALIZATION DENSITY IN THE PRODUCTION OF WHEAT IN WISCONSIN IN 1859.

(Based on Table III.)

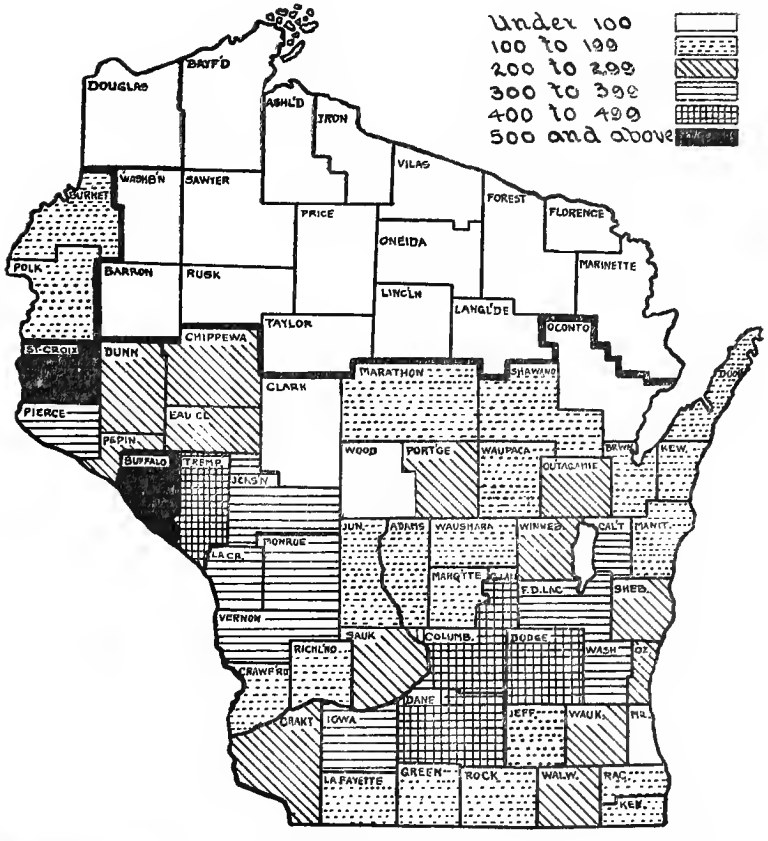

FIGURE 3.—SPECIALIZATION DENSITY IN THE PRODUCTION OF WHEAT IN WISCONSIN IN 1869.

(Based on Table III.)

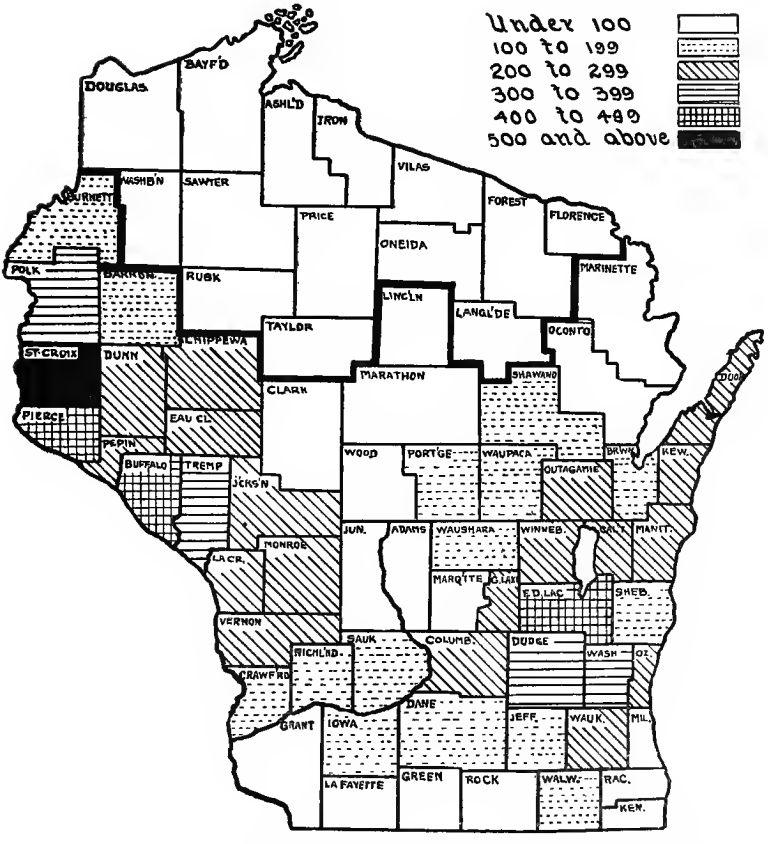

FIGURE 4.—SPECIALIZATION DENSITY IN THE PRODUCTION OF WHEAT IN WISCONSIN IN 1879.

(Based on Table III.)

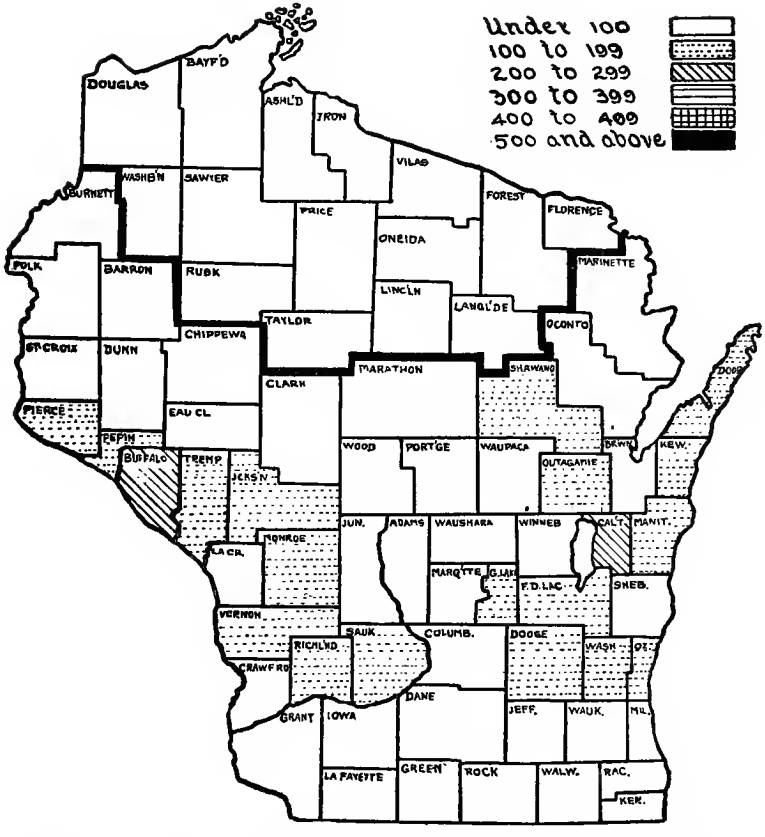

FIGURE 5.—SPECIALIZATION DENSITY IN THE PRODUCTION OF WHEAT IN WISCONSIN IN 1889.

(Based on Table III.)

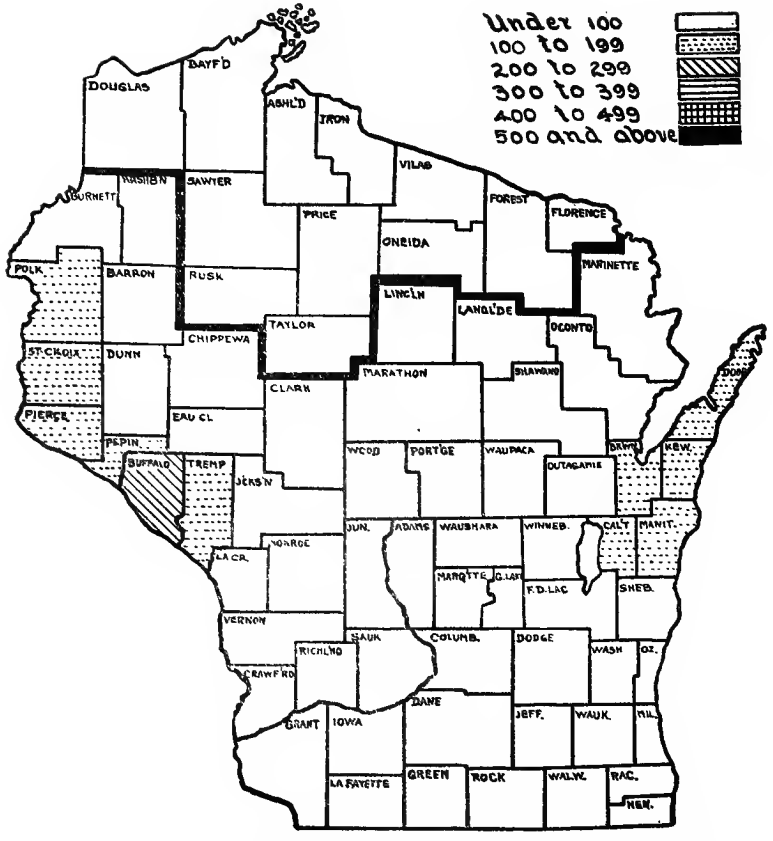

FIGURE 6. SPECIALIZATION DENSITY IN THE PRODUCTION OF WHEAT IN WISCONSIN IN 1899.

(Based on Table III.)

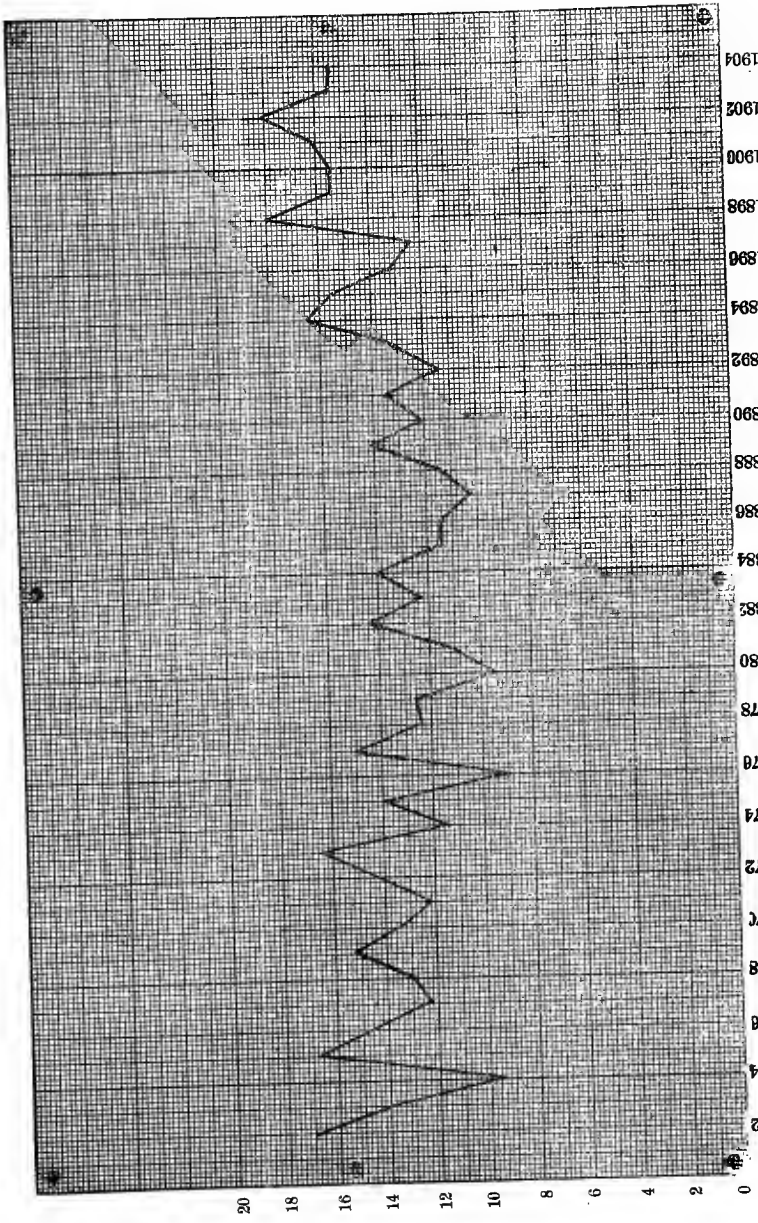

FIGURE 7.—GRAPHIC REPRESENTATION OF THE AVERAGE YIELD OF WHEAT PER ACRE IN WISCONSIN FOR THE YEARS 1862-1904.
(Based on the Estimate of the United States Department of Agriculture. See Table IV.)

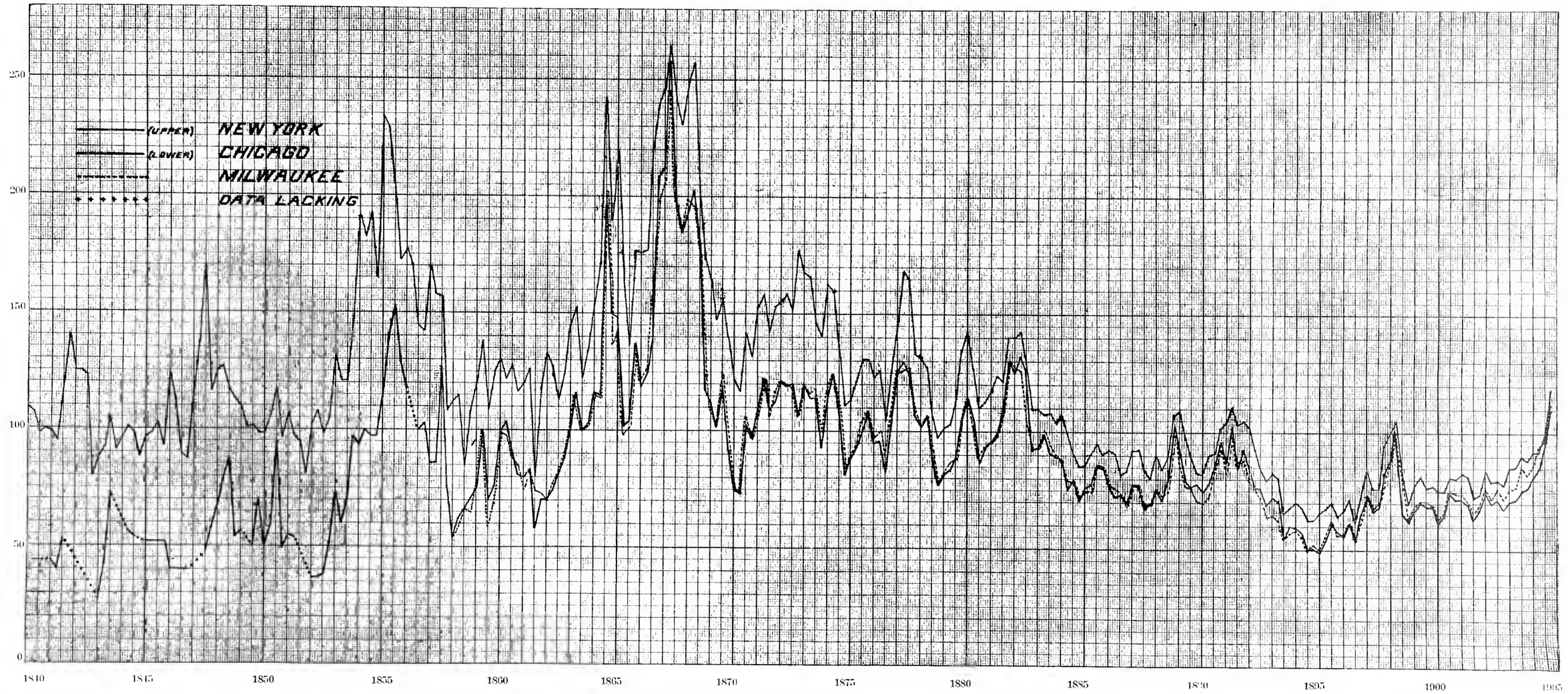

FIGURE 8.—GRAPHIC REPRESENTATION OF THE PRICE OF WHEAT AT MILWAUKEE, 1858–1904, AND AT CHICAGO AND NEW YORK CITY, 1840–1904, FOR THE MONTHS OF JANUARY, APRIL, JULY, AND OCTOBER.

(Based on Tables VII, IX and X.)

NOTE. The curve for Milwaukee prices is based on the minimum quotations throughout. For Chicago, the simple average of the quotations—where two quotations appear—is taken from 1840 to April, 1858, inclusive, while the minimum quotations are taken for the remaining years. For New York City, the curve is based on the simple average of the quotations—where two quotations appear—from 1840 to 1891, inclusive; for the remaining years the minimum quotations are followed. In studying this chart, caution should be used, and careful attention should be given to the footnote references and descriptive material accompanying the tables upon which it is based.

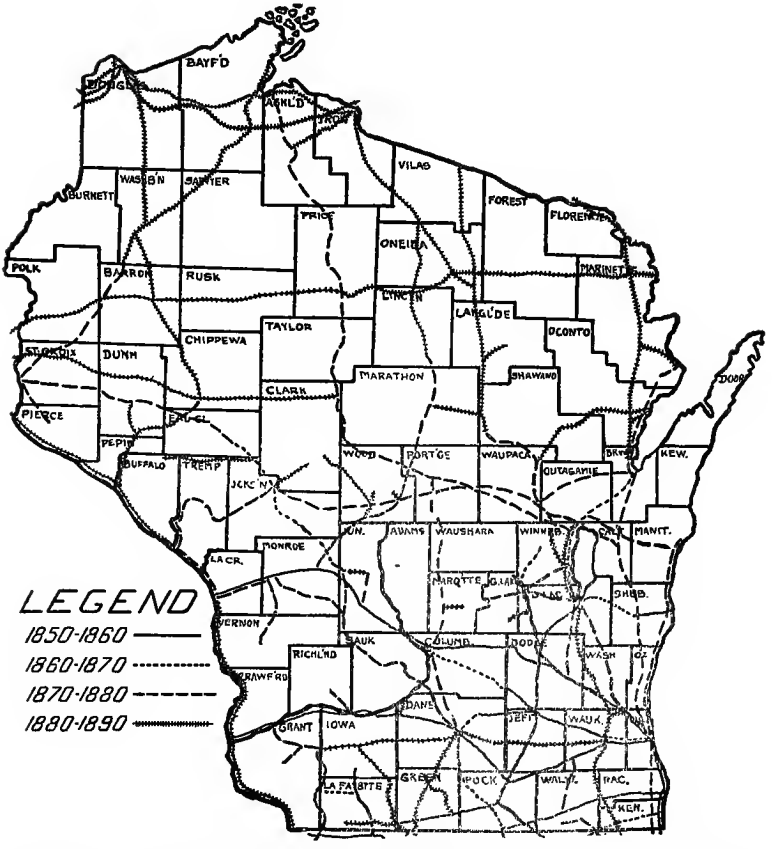

FIGURE 9.—MAP SHOWING THE CONSTRUCTION OF RAILROADS IN WISCONSIN, BY DECADES, 1850–1890.

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STATE OF NEW YORK
DEPARTMENT OF AGRICULTURE AND MARKETS
C. CHESTER DU MOND, COMMISSIONER
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HOWARD R. WAUGH
SECRETARY

September 26, 1944.

Mrs. B. E. Beasley
Agricultural Econ. Library
N.Y.S. College of Agriculture
Ithaca, N. Y.

Dear Madam:

The Department did not publish a 1939 edition of the Law, but I am forwarding a copy of the 1940 edition. We did not issue a 1941 edition. I am sending bulletin 342, Agriculture and Markets Law for 1942 with 1943 supplement. We have not published a 1944 edition.

Very truly yours,

HRWaugh.

elc

Secretary

[redacted] (Chapter 23T of the L[redacted]

On pages 306-9 is synopsis of Rules and Regulations promulgated under Agriculture and Markets Law

[redacted]

AGRICULTURAL BULLETIN

ALBANY, N. Y. MAY, 1943

Bulletin 342

AGRICULTURE AND MARKETS LAW

1942

With Supplement Incorporating 1943 Amendments

(Chapter 48 of the Laws of 1922, with amendments)

1933 n.p.
1941 n.p.

On pages 269-305, inclusive, are given provisions of

Cooperative Corporations Law

(Chapter 231 of the Laws of 1926 as amended.)

On pages 306-9 is synopsis of Rules and Regulations promulgated under Agriculture and Markets Law